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DEPARTMENT OF HEALTH

Amendment and Compilation of Chapter 11-20
Hawaii Administrative Rules
November 13, 2002

SUMMARY

1. Title amended.
2. §11-20-2, §11-20-3 and §11-20-4 are amended.
3. A new §11-20-4.1 is added.
4. §11-20-6 is amended.
5. A new §11-20-7.5 is added.
6. §11-20-9 is amended.
7. §11-20-12 is amended.
8. §11-20-15 is amended.
9. §11-20-18 is amended.
10. §11-20-28 and §11-20-29 are amended.
11. §11-20-36 is amended.
12. §11-20-37 is repealed.
13. §11-20-45 and §11-20-46 are amended.
14. A new §11-20-45.1 is added.
15. A new §11-20-46.1 is added.
16. §11-20-48 and §11-20-48.5 are amended.
17. Appendix A is amended.
18. New Appendices B, C, D, E and F are added.
19. Chapter 20 is compiled.



HAWAII ADMINISTRATIVE RULES

TITLE 11

DEPARTMENT OF HEALTH

CHAPTER 20

RULES RELATING TO POTABLE WATER SYSTEMS

- §11-20-1 Coverage
- §11-20-2 Definitions
- §11-20-3 Maximum contaminant levels for inorganic chemicals
- §11-20-4 Maximum contaminant levels for organic chemicals
- §11-20-4.1 Maximum contaminant levels for disinfection byproducts
- §11-20-5 Maximum contaminant levels for turbidity
- §11-20-6 Maximum microbiological contaminant levels
- §11-20-7 Maximum contaminant levels for radionuclides
- §11-20-7.5 Maximum residual disinfectant levels
- §11-20-8 Sampling and analytical requirements
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- §11-20-10 Turbidity sampling and analytical requirements
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- §11-20-12 Organic chemicals other than total trihalomethanes, sampling and analytical requirements
- §11-20-13 Radionuclide sampling and analytical requirements
- §11-20-14 Alternative analytical techniques
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- §11-20-16 Monitoring of consecutive public water systems
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- §11-20-20 Requirements for a variance
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- §11-20-26 Disposition of a request for variance or exemption
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- §11-20-28 Final schedule
- §11-20-29 Use of new sources of raw water for public water systems
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- §11-20-36 Reporting and public notification for certain unregulated contaminants
- §11-20-37 Repealed
- §11-20-38 Additives
- §11-20-39 Time requirements
- §11-20-40 Criteria and procedures for public water systems using point-of-entry devices
- §11-20-41 Use of other non-centralized treatment devices
- §11-20-42 Bottled water and point-of-use devices
- §11-20-43 Variances from the maximum contaminant levels for synthetic organic chemicals
- §11-20-44 Repealed
- §11-20-45 Total trihalomethanes sampling, analytical and other requirements
- §11-20-45.1 Disinfectant residuals, disinfection byproducts, and disinfection byproduct precursors
- §11-20-46 Filtration and disinfection (Surface Water Treatment Rule)
- §11-20-46.1 Enhanced filtration and disinfection
- §11-20-47 Treatment techniques for acrylamide and epichlorohydrin
- §11-20-48 Adoption of the national primary drinking water regulations for lead and copper
- §11-20-48.5 Consumer confidence reports
- §11-20-49 Severability clause

Historical Note: Chapter 20 of Title 11, Administrative Rules, is based substantially upon Chapter 49 of the Public Health Regulations, Department of Health. [Eff 8/16/77; R 12/26/81]

§11-20-1 Coverage. This chapter applies to each public water system, unless the public water system meets all of the following conditions:

- (1) It consists only of distribution and storage facilities (and does not have any collection and treatment facilities);
- (2) It obtains all of its water from, but is not owned or operated by, a public water system to which such rules apply;
- (3) It does not sell water to any person; and
- (4) It is not a carrier which conveys passengers in interstate commerce. [Eff 12/26/81; comp 3/7/92; am and comp 1/2/93; comp 12/15/94; comp 10/13/97;

comp 9/7/99; comp NOV 30 2002] (Auth: HRS
 §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42
 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142,
 §142.10)

§11-20-2 Definitions. As used in this chapter:

"Act" means the Public Health Service Act, as amended by the Safe Drinking Water Act, P.L. 93-523, December 16, 1974, Safe Drinking Water Act Amendments of 1986, P.L. 99-339, June 19, 1986 and Safe Drinking Water Act Amendments of 1996, P.L. 104-182, August 6, 1996.

"Acute violation" means a violation of the maximum contaminant levels of contaminants that may pose an acute risk to human health. The following violations are acute violations:

- (1) Violations determined by the director as posing an acute risk to human health.
- (2) Violation of the MCL for nitrate or nitrite as provided in section 11-20-3 and determined according to section 11-20-11(i) (3).
- (3) Violation of the MCL for total coliforms, as provided in section 11-20-6(b), and which occurs when a repeat sample is fecal coliform-positive or E. coli-positive, or a total coliform-positive repeat sample follows a fecal coliform-positive or E. coli-positive routine sample.

"Administrator" means the administrator of the United States Environmental Protection Agency, or authorized representative.

"Best available technology" or "BAT" means the best technology, treatment techniques, or other means which the director finds, after examination for efficacy under field conditions and not solely under laboratory conditions, are available (taking cost into consideration). For the purposes of setting MCLs for synthetic organic chemicals, any BAT shall be at least as effective as granular activated carbon.

"Capacity" means the overall capability of a water system to consistently produce and deliver water meeting all national and state primary drinking water regulations in effect or likely to be in effect when new or modified operations begin. Capacity includes the technical, managerial, and financial capacities of the water system to plan for, achieve, and maintain compliance with applicable national and state primary drinking water regulations.

"Coagulation" means a process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs.

"Community water system" means a public water system which serves at least fifteen service connections used by year-round residents or regularly serves at least twenty-five year-round

residents.

"Compliance cycle" means the nine-year calendar year cycle during which public water systems must monitor. Each compliance cycle consists of three three-year compliance periods. The first calendar year cycle begins January 1, 1993 and ends December 31, 2001; the second begins January 1, 2002 and ends December 31, 2010; the third begins January 1, 2011 and ends December 31, 2019.

"Compliance period" means a three-year calendar year period within a compliance cycle. Each compliance cycle has three three-year compliance periods. Within the first compliance cycle, the first compliance period runs from January 1, 1993 to December 31, 1995; the second from January 1, 1996 to December 31, 1998; the third from January 1, 1999 to December 31, 2001.

"Composite Correction Program" (CCP) consists of a Comprehensive Performance Evaluation (CPE) and Comprehensive Technical Assistance (CTA), both performed by a state-approved third party.

"Comprehensive Performance Evaluation" (CPE) means a thorough review and analysis of a treatment plant's performance-based capabilities and associated administrative, operation, and maintenance practices. It is conducted by a state-approved third party to identify factors that may be adversely impacting a plant's capability to achieve compliance and emphasizes approaches that can be implemented without significant capital improvements. The CPE must consist of at least the following components: assessment of plant performance; evaluation of major unit processes; identification and prioritization of performance limiting factors; assessment of the applicability of comprehensive technical assistance (CTA); and preparation of a CPE report.

"Comprehensive Technical Assistance" (CTA) means the performance improvement phase that is implemented if CPE results indicate improved performance potential. During the CTA phase, the system must identify and systematically address plant-specific factors. The CTA is a combination of utilizing CPE results as a basis for followup, implementing process control priority-setting techniques, and maintaining long-term involvement to systematically train staff and administrators.

"Confluent growth" means a continuous bacterial growth covering the entire filtration area of a membrane filter, or a portion thereof, in which bacterial colonies are not discrete.

"Contaminant" means any physical, chemical, biological, or radiological substance or matter in water. An additive contaminant under this definition may have a beneficial or a detrimental effect on the potability of the water.

"Conventional filtration treatment" means a series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal.

"CT" or "CTcalc" is the product of "residual disinfectant

concentration" (C) in milligrams per liter or mg/l determined before or at the first customer, and the corresponding "disinfectant contact time" (T) in minutes, i.e., "C" x "T". If a public water system applies disinfectants at more than one point prior to the first customer, it shall determine the CT of each disinfectant sequence before or at the first customer to determine the total per cent inactivation or "total inactivation ratio." In determining the total inactivation ratio, the supplier shall determine the residual disinfectant concentration of each disinfection sequence and corresponding contact time before any subsequent disinfection application point(s).

"CT_{99.9}" means the CT value required for 99.9 per cent (3-log) inactivation of *Giardia lamblia* cysts.

"CT inactivation ratio" means $(CT_{calc}) / (CT_{99.9})$. The sum of the inactivation ratios, or total inactivation ratio shown as $(CT_{calc}) / (CT_{99.9})$ is calculated by adding together the inactivation ratio for each disinfection sequence. A total inactivation ratio equal to or greater than 1.0 is assumed to provide a 3-log inactivation of *Giardia lamblia* cysts.

"Department" means the department of health, State of Hawaii.

"Diatomaceous earth filtration" means a process resulting in substantial particulate removal in which (1) a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum), and (2) while the water is filtered by passing through the cake on the septum, additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake.

"Direct additives" means contaminants added to water in the protection of drinking water.

"Direct filtration" means a series of processes including coagulation, flocculation, and filtration but excluding sedimentation resulting in substantial particulate removal.

"Director" means the director of the Hawaii state department of health or the director's authorized agent.

"Disinfectant contact time" ("T" in CT calculations) means the time in minutes that it takes for water to move from the point of disinfectant application or the previous point of disinfectant residual measurement to a point before or at the point where residual disinfectant concentration ("C") is measured. Where only one "C" is measured, "T" is the time in minutes that it takes for water to move from the point of disinfectant application to a point before or at the point where residual disinfectant concentration ("C") is measured. Where more than one "C" is measured, "T" is (a) for the first measurement of "C", the time in minutes that it takes for water to move from the first or only point of disinfectant application to a point before or at the point where the first "C" is measured, and (b) for subsequent measurements of "C", the time in minutes that it takes for water

to move from the previous "C" measurement point to the "C" measurement point for which the particular "T" is being calculated. Disinfectant contact time in pipelines shall be calculated based on "plug flow" by dividing the internal volume of the pipe by the maximum hourly flow rate through that pipe. Disinfectant contact time within mixing basins and storage reservoirs shall be determined by tracer studies or an equivalent demonstration.

"Disinfection" means a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents.

"Disinfection profile" means a summary of daily *Giardia lamblia* inactivation through the treatment plant.

"Domestic or other non-distribution system plumbing problem" means a coliform contamination problem in a public water system with more than one service connection that is limited to the specific service connection from which the coliform-positive sample was taken.

"Dose equivalent" means the product of the absorbed dose from ionizing radiation and such factors as account for differences in biological effectiveness due to the type of radiation and its distribution in the body as specified by the International Commission on Radiological Units and Measurements (ICRU).

"Enhanced coagulation" means the addition of sufficient coagulant for improved removal of disinfection byproduct precursors by conventional filtration treatment.

"Enhanced softening" means the improved removal of disinfection byproduct precursors by precipitative softening.

"Filter profile" means a graphical representation of individual filter performance, based on continuous turbidity measurements or total particle counts versus time for an entire filter run, from startup to backwash inclusively, that includes an assessment of filter performance while another filter is being backwashed.

"Fecal coliform" means part of the total coliform group that are gram negative, nonspore forming rods that ferment lactose in 24 ± 2 hours at 44.5 ± 0.2 degrees Centigrade with the production of gas.

"Filtration" means a process for removing particulate matter from water by passage through porous media.

"Financial capacity" refers to the financial resources of the water system, including an adequate budget, adequate fiscal controls, and credit worthiness.

"Flocculation" means a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable particles through gentle stirring by hydraulic or mechanical means.

"Granular activated carbon" or "GAC" consists of fine carbon particles placed in pressure filters to adsorb the organics in the

water.

"GAC10" means granular activated carbon filter beds with an empty-bed contact time of ten minutes based on average daily flow and a carbon reactivation frequency of every one hundred eighty days.

"Gross alpha particle activity" means the total radioactivity due to alpha particle emission as inferred from measurements on a dry sample.

"Gross beta particle activity" means the total radioactivity due to beta particle emission as inferred from measurements on a dry sample.

"Ground water under the direct influence of surface water" (GWUDI) means any water beneath the surface of the ground with:

- (1) Significant occurrence of large-diameter pathogens such as Giardia lamblia, or Cryptosporidium; or
- (2) Significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or Ph which closely correlate to climatological or surface water conditions.

Direct influence shall be determined for individual sources in accordance with criteria established by the director. The director's determination of direct influence may be based on site-specific measurements of water quality and/or documentation of well construction characteristics and geology with field evaluation.

"Haloacetic acids (five)" (HAA5) means the sum of the concentrations in milligrams per liter of the haloacetic acid compounds (monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid), rounded to two significant figures after addition.

"Halogen" means one of the chemical elements chlorine, bromine, or iodine.

"Heterotrophic bacteria" means a broad class of aerobic and facultative anaerobic organisms which use organic nutrients for growth. The group includes many innocuous bacteria as well as virtually all of the bacteria pathogens and those bacteria infect when the host defenses are weakened.

"Heterotrophic plate count" or "HPC" means the number of heterotrophic bacteria contained in a water sample.

"Indirect additives" means contaminants that are introduced into drinking water through contact with surfaces of material or products used for its treatment, storage, transmission, or distribution.

"Initial compliance period" means the first full three-year compliance period which begins at least eighteen months after federal promulgation. For the Phase V contaminants listed in section 11-20-4(d)(20)-(22), section 11-20-4(e)(19)-(33), and section 11-20-3(b)(11)-(15), the initial compliance period for systems with 150 or more service connections is January 1993-

December 1995 (the first full three-year compliance period after July 17, 1992), and for systems having fewer than 150 service connections, the initial compliance period is January 1996-December 1998 (the first full three-year compliance period after January 17, 1994).

"Legionella" means a genus of bacteria, some species of which have caused a type of pneumonia called Legionnaires Disease.

"Managerial capacity" refers to the ability of the water system to manage itself, including clear ownership, organization, and communications, and accountability; adequate management, staffing, policies, training, and information management; and effective relationships with customers and regulatory agencies.

"Man-made beta particle and photon emitters" means all radionuclides emitting beta particles or photons, or both, listed in Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure, National Bureau of Standards Handbook 69, except the daughter products of thorium-232, uranium-235, and uranium-238.

"Maximum contaminant level or "MCL" means the maximum permissible level of a contaminant in water which is delivered to any user of a public water system.

"Maximum contaminant level goal" or "MCLG" means the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health or persons would occur, and which allows an adequate margin of safety. Maximum contaminant level goals are nonenforceable health goals.

"Maximum residual disinfectant level" (MRDL) means a level of a disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects. For chlorine and chloramines, a PWS is in compliance with the MRDL when the running annual average of monthly averages of samples taken in the distribution system, computed quarterly, is less than or equal to the MRDL. For chlorine dioxide, a PWS is in compliance with the MRDL when daily samples are taken at the entrance to the distribution system and no two consecutive daily samples exceed the MRDL. MRDLs are enforceable in the same manner as maximum contaminant levels under Section 1412 of the Safe Drinking Water Act.

"Maximum residual disinfectant level goal" (MRDLG) means the maximum level of a disinfectant added for water treatment at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. MRDLGs are nonenforceable health goals and do not reflect the benefit of the addition of a chemical for control of waterborne microbial contaminants.

"Maximum total trihalomethane potential" or "MTTHMP" means the maximum concentration of total trihalomethanes produced in a given water containing a disinfectant residual after seven days at a temperature of 25 degrees Centigrade or above.

"Near the first service connection" means at one of the twenty per cent of all service connections in the entire system that are nearest the water supply treatment facility, as measured by water transport time within the distribution system.

"Non-community water system" means a public water system that is not a community water system.

"Non-transient non-community water system" or "NTNCWS" means a public water system that is not a community water system and that regularly serves at least twenty-five of the same persons over six months per year.

"Packed tower aeration" or "PTA" consists of high-surface area packing material supported and contained in a cylindrical shell. Water flow is normally downward through the packing material with either forced draft or induced draft upward airflow.

"Performance evaluation sample" means a reference sample provided to a laboratory for the purpose of demonstrating that the laboratory can successfully analyze the sample within limits of performance specified by the EPA. The limits of performance for inorganic samples are defined in 40 C.F.R. §141.23(k)(3)(ii), for volatile organic chemicals are defined in 40 C.F.R. §141.24(f)(17)(i), and for synthetic organic chemicals are defined in 40 C.F.R. §141.24(h)(19)(i)(B). The true value of the concentration of the reference material is unknown to the laboratory at the time of the analysis.

"Person" means an individual, corporation, company, association, partnership, county, municipality; or state, federal, or tribal agency.

"Pecurie" or "pCi" means that quantity of radioactive material producing 2.22 nuclear transformations per minute.

"pCi/l" is a symbol for picurie per liter.

"Point of disinfectant application" is the point where the disinfectant is applied and water downstream of that point is not subject to recontamination by surface water runoff.

"Point-of-entry treatment device" is a treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in the drinking water distributed throughout the house or building.

"Point-of-use treatment device" is a treatment device applied to a single tap used for the purpose of reducing contaminants in drinking water at that one tap.

"Public water system" means a system which provides water for human consumption, through pipes or other constructed conveyances if the system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least sixty days out of the year. Such term includes (1) any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system, and (2) any collection or pretreatment storage facilities not under such control which are

used primarily in connection with such system. A public water system may be privately or publicly owned or operated. A public water system is a "community water system" or a "non-community water system".

"Rem" means the unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system. A "millirem" or "mrem" is 1/1000 of a rem.

"Repeat compliance period" means any subsequent compliance period after the initial compliance period.

"Residual disinfectant concentration" ("C" in CT calculations) means the concentration of disinfectant measured in milligrams per liter or mg/l in a representative sample of water.

"Sanitary survey" means an on-site review of the water source, facilities, equipment, operation, and maintenance of a public water system for the purpose of evaluating the adequacy of such source, facilities, equipment, operation, and maintenance for producing and distributing safe drinking water.

"Secondary maximum contaminant levels" or "SMCLS" means the maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of the public water system.

"Sedimentation" means a process for removal of solids before filtration by gravity or separation.

"Slow sand filtration" means a process involving passage of raw water through a bed of sand at low velocity (generally less than 0.4 meters per hour or 1.2 feet per hour) resulting in substantial particulate removal by physical and biological mechanisms.

"Specific Ultraviolet Absorption" (SUVA) is an indicator of the humic content of water. It is a calculated parameter obtained by dividing a sample's ultraviolet absorption at a wavelength of 254 nanometers (nm) (UV_{254}) (in m^{-1}) by its concentration of dissolved organic carbon (DOC) (in mg/L).

"Standard sample" means the aliquot of finished drinking water that is examined for the presence of coliform bacteria.

"State" means the Hawaii state department of health.

"Subpart H systems" means public water systems using surface water or ground water under the direct influence of surface water as a source that are subject to 40 C.F.R. Part 141 Subpart H.

"Supplier of water" means any person who owns or operates a public water system.

"Surface water" means all water which is open to the atmosphere and subject to surface runoff.

"Surface water treatment rule administrative manual" is a separate document adopted as part of this chapter and, as such, has the effect of law in the uniform enforcement of this chapter.

"System with a single service connection" means a system which supplies drinking water to consumers via a single service line.

"Technical capacity" refers to the physical infrastructure of the water system, including but not limited to the adequacy of the water source(s), treatment, storage, and distribution systems, and the ability of system personnel to adequately operate and maintain the system and to otherwise implement technical knowledge.

"Too numerous to count" means that the total number of bacterial colonies exceeds 200 on a 47-millimeter diameter membrane filter used for coliform detection.

"Total coliform" means all aerobic and facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria that ferment lactose with gas and acid formation within forty eight hours at 35 degrees Centigrade or hydrolyzes OMPG to form a yellow color.

"Total Organic Carbon" (TOC) means total organic carbon in mg/L measured using heat, oxygen, ultraviolet irradiation, chemical oxidants (or combinations of these oxidants), that convert organic carbon to carbon dioxide, rounded to two significant figures.

"Total trihalomethanes" or "TTHM" means the sum of the concentration in milligrams per liter of the trihalomethane compounds (trichloromethane (chloroform), dibromochloromethane, bromodichloromethane, and tribromomethane (bromoform)), rounded to two significant figures.

"Transient non-community water system" or TWS means a non-community water system that does not regularly serve at least twenty-five of the same persons over six months per year.

"Treatment technique requirement" means a requirement of the state primary drinking water rules which specifies for a contaminant a specific treatment technique(s) known to the director which leads to a reduction in the level of such contaminant sufficient to comply with the requirements of this chapter.

"Trihalomethane" or "THM" means one of the family of organic compounds, names as derivatives of methane, wherein three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure.

"Turbidity" means suspended material such as clay, silt, finely divided organic material, or other inorganic material in water. Turbidity is measured in nephelometric turbidity units (NTU).

"Uncovered finished water storage facility" means a tank, reservoir, or other facility used to store water that will undergo no further treatment except residual disinfection and is open to the atmosphere.

"Virus" means a virus of fecal origin which is infectious to humans by waterborne transmission.

"Waterborne disease outbreak" means the significant occurrence of acute infectious illness, epidemiologically

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associated with the ingestion of water from a public water system which is deficient in treatment, as determined by the director. [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; am and comp 10/13/97; am and comp 9/7/99; am and comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-2.5, 340E-9) (Imp: HRS §§340E-2, 340E-2.5, 340E-9; 42 U.S.C. §§300g-1, 300g-2, 300g-3, 300g-9, 300j-4, 300g-b, 300j-9; 40 C.F.R. Parts 141, 142, §141.2, §142.10)

§11-20-3 Maximum contaminant levels for inorganic chemicals. (a) The MCL for nitrate, nitrite, and total nitrate and nitrite is applicable to all public water systems except as provided by subsection (d). The MCL for fluoride apply only to community water systems. The MCLs for the other inorganic chemicals apply to community water systems and non-transient non-community water systems. Compliance with MCLs for inorganic chemicals is calculated pursuant to section 11-20-11.

(b) The following are the MCLs for inorganic chemicals:

Contaminant	MCL, Milligrams Per Liter (mg/l)	Chemical Abstract Source Registry Number (CAS #)
(1) Arsenic	0.05	7440-38-2
(2) Asbestos	7 million fibers/liter (longer than 10 µm)	
(3) Barium	2	7440-39-3
(4) Cadmium	0.005	7440-43-9
(5) Chromium	0.1	7440-47-3
(6) Mercury	0.002	7439-97-6
(7) Nitrate	10 (as Nitrogen)	14797-55-8
(8) Nitrite	1 (as Nitrogen)	
(9) Total Nitrate and Nitrite	10 (as Nitrogen)	
(10) Selenium	0.05	7882-49-2
(11) Antimony	0.006	7440-36-0
(12) Beryllium	0.004	7440-41-7
(13) Cyanide (as free Cyanide)	0.2	
(14) (reserved)		
(15) Thallium	0.002	7440-28-0
(16) Fluoride	4.0	16984-48-8

(c) At the discretion of the director, nitrate levels not to exceed twenty milligrams per liter or mg/l may be allowed in a non-community water system if the supplier of water demonstrates to the satisfaction of the director that:

- (1) Such water will not be available to children under six months of age;

- (2) There will be continuous posting of the fact that nitrate levels exceed ten milligrams per liter or mg/l and the potential health effects of exposure;
- (3) Local and state public health authorities will be notified annually of nitrate levels that exceed ten milligrams per liter or mg/l; and
- (4) No adverse health effects shall result.
- (d) The best available technologies (BATs) for treating inorganic chemicals to achieve compliance with their MCLs are found in 40 C.F.R. §141.62(c). [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; am and comp 10/13/97; am and comp 9/7/99; comp 9/7/99; am and comp 11/13/99] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §141.11, §141.62, §142.10)

§11-20-4 Maximum contaminant levels for organic chemicals. The following are the MCLs for organic chemicals. The MCLs for organic chemicals in subsection (a) apply to all community water systems. Compliance with the MCL in subsection (a) is calculated pursuant to section 11-20-12. The MCL for total trihalomethanes in subsection (c) applies to community water systems with a surface water source or a GWUDI source which serve a population of 10,000 or more individuals until December 31, 2001. This level applies to community water systems that use only ground water not under the direct influence of surface water and serve a population of 10,000 people or more until December 31, 2003. Compliance with the MCL for total trihalomethanes is calculated pursuant to section 11-20-45. After December 31, 2003, this section is no longer applicable.

Contaminant	MCL (mg/L)	CAS No.
(a) (Reserved)		
(b) (Reserved)		
(c) Total trihalomethanes (the sum of the concentrations of bromodichloromethane, dibromochloromethane, tribromomethane (bromoform) and trichloromethane (chloroform))	0.10	
(d) The following MCLs for organic contaminants apply to community and non-transient, non-community water systems.		

	Contaminant	MCL (mg/l)	CAS. No.
(1)	Benzene	0.005	71-43-2
(2)	Carbon tetrachloride	0.005	56-23-5
(3)	o-Dichlorobenzene	0.6	95-50-1
(4)	para-Dichlorobenzene	0.075	106-46-7
(5)	1,2-Dichloroethane	0.005	107-06-2
(6)	1,1-Dichloroethylene	0.007	75-35-4
(7)	cis-1,2-Dichloroethylene	0.07	156-59-2
(8)	trans-1,2-Dichloroethylene	0.1	156-60-5
(9)	1,2-Dichloropropane (DCP)	0.005	78-87-5
(10)	Ethylbenzene	0.7	100-41-4
(11)	Monochlorobenzene	0.1	108-90-7
(12)	Styrene	0.1	100-42-5
(13)	Tetrachloroethylene	0.005	127-18-4
(14)	Toluene	1	108-88-3
(15)	1,1,1-Trichloroethane	0.2	71-55-6
(16)	Trichloroethylene	0.005	79-01-6
(17)	1,2,3-Trichloropropane (TCP)	0.0006	96-18-4
(18)	Vinyl chloride	0.002	75-01-4
(19)	Xylenes (total)	10	1330-20-7
(20)	Dichloromethane	0.005	75-09-2
(21)	1,2,4-Trichlorobenzene	0.07	120-82-1
(22)	1,1,2-Trichloroethane	0.005	79-00-5

- (e) The following MCLs for synthetic organic contaminants apply to community and non-transient, non-community water systems.

	Contaminant	MCL (mg/l)	CAS No.
(1)	Alachlor	0.002	15972-60-8
(2)	(Reserved)		
(3)	(Reserved)		
(4)	(Reserved)		
(5)	Atrazine	0.003	1912-24-9
(6)	Carbofuran	0.04	1563-66-2
(7)	Chlordane	0.002	57-74-9
(8)	Dibromochloropropane (DBCP)	0.00004	96-12-8
(9)	2,4-D	0.07	94-75-7
(10)	Ethylene dibromide (EDB)	0.00004	106-93-4
(11)	Heptachlor	0.0004	76-44-8
(12)	Heptachlor epoxide	0.0002	1024-57-3
(13)	Lindane	0.0002	58-89-9
(14)	Methoxychlor	0.04	72-43-5
(15)	Polychlorinated biphenyls (PCB)	0.0005	1336-36-3
(16)	Pentachlorophenol	0.001	87-86-5
(17)	Toxaphene	0.003	8001-35-2
(18)	2,4,5-TP (Silvex)	0.05	93-72-1
(19)	Benzo[a]pyrene	0.0002	50-32-8

(20)	Dalapon	0.2	75-99-0
(21)	Di(2-ethylhexyl) adipate	0.4	103-23-1
(22)	Di(2-ethylhexyl) phthalate	0.006	117-81-7
(23)	Dinoseb	0.007	88-85-7
(24)	Diquat	0.02	85-00-7
(25)	Endothall	0.1	145-73-3
(26)	Endrin	0.002	72-20-8
(27)	Glyphosate	0.7	1071-53-6
(28)	Hexachlorobenzene	0.001	118-74-1
(29)	Hexachlorocyclopentadiene	0.05	77-47-4
(30)	Oxamyl (Vydate)	0.2	23135-22-0
(31)	Picloram	0.5	1918-02-1
(32)	Simazine	0.004	122-34-9
(33)	2,3,7,8-TCDD (Dioxin)	3×10^{-8}	1746-01-6

- (f) The best available technologies (BATs), treatment techniques, or other means available for achieving compliance with the organic contaminant MCLs are identified as either granular activated carbon (GAC), packed tower aeration (PTA), or oxidation (OX) in 40 CFR §141.61(b). [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; am and comp 10/13/97; am and comp 9/7/99; am and comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §142.10, §141.12, §141.61)

§11-20-4.1 Maximum contaminant levels for disinfection byproducts. (a) The maximum contaminant levels (MCLs) for disinfection byproducts are as follows:

Disinfection byproduct	MCL (mg/L)
Total trihalomethanes (TTHM)	0.080
Haloacetic acids (five) (HAA5)	0.060
Bromate	0.010
Chlorite	1.0

- (b) Compliance dates.
- (1) CWSs and NTNCWSs. Public water systems supplied by either a surface water source or by a ground water source under the direct influence of surface water serving 10,000 or more persons must comply with this section beginning January 1, 2002. Public water systems supplied by either a surface water source or by a ground water source under the direct influence of surface water serving fewer than 10,000 persons and

systems using only ground water not under the direct influence of surface water must comply with this section beginning January 1, 2004.

- (2) A system that is installing GAC or membrane technology to comply with this section may apply to the director for an extension of up to twenty four months past the dates in subsection (b), but not beyond December 31, 2003.

- (A) In their request to the State, systems will be required to:
- (i) Demonstrate the need for the extension through submittal of monitoring data;
 - (ii) Identify scope and complexity of planned capital improvements (submittal of plans, engineering alternative and pilot studies, etc.);and
 - (iii) Develop a projected planning, design and construction schedule;
- (B) Any extension agreement shall include as a minimum:
- (i) A compliance schedule with milestones;
 - (ii) Progress reports;
 - (iii) Compliance with interim measures;
 - (iv) Notice of the extension in the annual Consumer Confidence Report; and
 - (v) The requirement of public notification if MCLs, for which the extension was granted, are exceeded;
- (C) Interim measures developed by the State will be based on an evaluation of monitoring data, current treatment practices, and existing plant infrastructure;
- (D) A failure to meet the schedule or interim measures is an NPDWR violation.

(c) The director hereby identifies the following treatment techniques as the best technology for achieving compliance with the maximum contaminant levels for disinfection byproducts identified in subsection (a):

Disinfection byproduct	Best available technology
TTHM	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant
HAA5	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant.

Bromate	Control of ozone treatment process to reduce production of bromate.
Chlorite	Control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels.

The director may determine that alternative treatment techniques constitute best technology for achieving compliance with the maximum contaminant levels for disinfection byproducts identified in subsection (a) on a case-by-case basis.

[Eff and comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9)
 (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, 300j-9, 300j-11; 40 C.F.R. §141.64)

§11-20-5 Maximum contaminant levels for turbidity.

(a) The MCLs for turbidity apply to all public water systems using surface water sources in whole or in part.

(b) The requirements in this subsection apply to filtered surface water systems until June 29, 1993. The requirements in this subsection apply to unfiltered systems until June 29, 1993, or until filtration is installed, whichever is later. The director shall determine, in writing pursuant to 42 U.S.C. §300g-1(b)(7)(C)(iii), which systems must install filtration. The MCLs measured at a representative entry point(s) to the distribution system, are:

- (1) One turbidity unit, as determined by a monthly average pursuant to section 11-20-10 except that five or fewer turbidity units may be allowed if the supplier of water can demonstrate to the director that the higher turbidity does not do any of the following:
 - (A) Interfere with disinfection;
 - (B) Prevent maintenance of an effective disinfectant agent throughout the distribution system; or
 - (C) Interfere with microbiological determinations.
- (2) Five turbidity units based on an average for two consecutive days pursuant to section 11-20-10.

(c) The MCL for filtered water turbidity levels, after June 29, 1993, shall be less than or equal to the applicable value in this subsection in ninety-five per cent of the measurements taken every month, and shall not exceed 5 nephelometric turbidity units or NTU at any time for the following filter units:

- (1) Conventional treatment, direct filtration, and other filtration technologies, 0.5 nephelometric turbidity units or NTU; and

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- (2) Slow sand, and diatomaceous earth, 1.0 nephelometric turbidity units or NTU. [Eff 12/26/81; comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; am and comp 10/13/97; comp 9/7/99; comp **NOV 30 2002** 1 (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §141.13, §142.10)

§11-20-6 Maximum microbiological contaminant levels.

- (a) The MCL is based on the presence or absence of total coliforms in a sample, rather than coliform density.
 - (1) When at least forty samples per month are collected for a system, the system is in compliance with the MCL for total coliforms if no more than 5.0 per cent of the samples collected during a month are total coliform-positive.
 - (2) When fewer than forty samples per month are collected for a system, the system is in compliance with the MCL for total coliforms if no more than one sample collected during a month is total coliform-positive.
- (b) Any fecal coliform-positive or E. coli-positive repeat sample, or any total coliform-positive repeat sample following a fecal coliform-positive or E. coli-positive routine sample constitutes an acute violation of the MCL for total coliforms and is subject to the public notification requirements in section 11-20-18.
- (c) A supplier of water shall determine compliance with the MCL for total coliforms in subsections (a) and (b) for each month in which it is required to monitor for total coliforms.
- (d) The director hereby identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the MCL for total coliforms in subsections (a) and (b):
 - (1) Protection of wells from contamination by coliforms by appropriate placement and construction;
 - (2) Maintenance of a disinfectant residual throughout the distribution system;
 - (3) Proper maintenance of the distribution system including appropriate pipe replacement and repair procedures, main flushing programs, proper operation and maintenance of storage tanks and reservoirs, and continual maintenance of positive water pressure in all parts of the distribution system;
 - (4) Filtration and disinfection of surface water or disinfection of ground water using strong oxidants such as chlorine, chlorine dioxide, or ozone; and
 - (5) The development and implementation of an EPA-approved State Wellhead Protection Program under section 1428

of the SDWA. [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; comp 10/13/97; comp 9/7/99; am and comp]
 (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §141.63, §142.10)

S11-20-7 Maximum contaminant levels for radionuclides.

(a) The MCLs for radium-226, CAS #13982-63-3; radium-228, CAS #15262-20-1; and gross alpha particle radioactivity, applicable to community water systems, are:

- (1) Combined radium-226 and radium-228 -- 5 picocuries per liter or pCi/l.
- (2) Gross alpha particle activity (including radium-226 but excluding radon and uranium) -- 15 picocuries per liter or pCi/l.

(b) The MCLs for beta particle and photon radioactivity from man-made radionuclides, applicable to community water systems, are:

- (1) The average annual concentration of such radioactivity shall not produce an annual dose equivalent to the total body or any internal organ greater than four millirem per year or mrem/yr.
- (2) Except for the radionuclides listed in Table A, the concentration of man-made radionuclides causing four mrem total body or organ dose equivalent shall be calculated as specified in 40 C.F.R. §141.16. If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ shall not exceed four millirem per year or mrem/yr.

Table A

Average annual concentrations assumed to produce a total body or organ dose of four mrem/yr

Radionuclide	Critical Organ	Picocurie Per Liter (pCi/l)	CAS #
Tritium	Total body	20,000	10028-17-8
Strontium-90	Bone marrow	8	10098-97-2

[Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; am and comp 10/13/97; comp 9/7/99; comp]
 (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §141.15, §141.16, §142.10)

§11-20-7.5 Maximum residual disinfectant levels. (a)
Maximum residual disinfectant levels (MRDLs) are as follows:

Disinfectant residual	MRDL (mg/L)
Chlorine	4.0 (as Cl ₂)
Chloramines	4.0 (as Cl ₂)
Chlorine dioxide	0.8 (as ClO ₂)

(b) Compliance dates.

(1) CWSs and NTNCWSs. Public water systems supplied by either a surface water source or by a ground water source under the direct influence of surface water serving 10,000 or more persons must comply with this section beginning January 1, 2002. Public water systems supplied by either a surface water source or by a ground water source under the direct influence of surface water serving fewer than 10,000 persons and systems using only ground water not under the direct influence of surface water must comply with this section beginning January 1, 2004.

(2) Transient NCWSs. Public water systems supplied by either a surface water source or by a ground water source under the direct influence of surface water serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2002. Public water systems supplied by either a surface water source or by a ground water source under the direct influence of surface water serving fewer than 10,000 persons and using chlorine dioxide as a disinfectant or oxidant and systems using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004.

(c) The director hereby identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum residual disinfectant levels identified in subsection (a): control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels. [Eff and comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, 300j-9, 300j-11; 40 C.F.R. §141.65)

§11-20-8 Sampling and analytical requirements. All sampling and analyses required by this chapter shall be performed in accordance with procedures approved by the administrator. In any case in which a provision of this chapter requires sampling and analysis to be performed by the supplier of water, such sampling may, at the discretion of the director, be performed by the State pursuant to prior notification to the water supplier by the director and under such conditions as the director may specify. [Eff 12/26/81; comp 3/7/92; am and comp 1/2/93; comp 12/15/94; comp 10/13/97; comp 9/7/99; NUV 30 JUL] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §141.21, §142.10)

§11-20-9 Microbiological contaminant sampling and analytical requirements. (a) Routine monitoring.

- (1) A supplier of water shall collect total coliform samples at sites which are representative of water throughout the distribution system according to a written sample siting plan. These plans are subject to the director's review and revision.
- (2) The monitoring frequency for total coliforms for community and noncommunity water systems is based on the population served by the system, as follows:

TOTAL COLIFORM MONITORING FREQUENCY

Population served:		Minimum Number of Samples Per Month
25 to	1,000 ¹	1
1,001 to	2,500	2
2,501 to	3,300	3
3,301 to	4,100	4
4,101 to	4,900	5
4,901 to	5,800	6
5,801 to	6,700	7
6,701 to	7,600	8
7,601 to	8,500	9
8,501 to	12,900	10
12,901 to	17,200	15
17,201 to	21,500	20
21,501 to	25,000	25
25,001 to	33,000	30
33,001 to	41,000	40

41,001 to	50,000	50
50,001 to	59,000	60
59,001 to	70,000	70
70,001 to	83,000	80
83,001 to	96,000	90
96,001 to	130,000	100
130,001 to	220,000	120
220,001 to	320,000	150
320,001 to	450,000	180
450,001 to	600,000	210
600,001 to	780,000	240
780,001 to	970,000	270
970,001 to	1,230,000	300
1,230,001 to	1,520,000	330
1,520,001 to	1,850,000	360
1,850,001 to	2,270,000	390
2,270,001 to	3,020,000	420
3,020,001 to	3,960,000	450
3,960,001 or more		480

¹ Includes public water systems which have at least 15 service connections, but serve fewer than 25 persons.

- (3) The supplier of water shall collect samples at regular time intervals throughout the month, except that a system which uses only ground water (except ground water under the direct influence of surface water, as defined in section 11-20-2) and serves 4,900 persons or fewer, may collect all required samples on a single day if they are taken from different sites and prior approval by the director has been obtained.
- (4) Special purpose samples, such as those taken to determine whether disinfection practices are sufficient following pipe placement, replacement, or repair, shall not be used to determine compliance with the MCL for total coliforms in section 11-20-6. Repeat samples taken pursuant to subsection (b) are not considered special purpose samples, and shall be used to determine compliance with the MCL for total coliforms in section 11-20-6.
- (b) Repeat monitoring.
- (1) If a routine sample is total coliform-positive, the supplier of water shall collect a set of repeat samples within twenty-four hours of being notified of the positive result. The supplier who collects more than one routine sample per month shall collect no fewer than three repeat samples for each total coliform-positive sample found. A supplier who normally collects one routine sample per month shall

- collect no fewer than four repeat samples for each total coliform-positive sample found. The director may extend the twenty-four hour limit on a case-by-case basis if the supplier has a logistical problem in collecting or analyzing the repeat samples within twenty-four hours that is beyond the supplier's control. In the case of an extension, the director shall specify how much time the supplier has to collect the repeat samples.
- (2) The supplier shall collect at least one repeat sample from the sampling tap where the original total coliform-positive sample was taken, and at least one repeat sample at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site. If a total coliform-positive sample is at the end of the distribution system, or one away from the end of the distribution system, the director may waive the requirement to collect at least one repeat sample upstream or downstream of the original sampling site. However, the supplier shall collect the required number of repeat samples. A system with a single service connection may take all repeats from the same sample tap.
 - (3) The supplier shall collect all repeat samples on the same day.
 - (4) If one or more repeat samples in the set is total coliform-positive, the supplier shall collect an additional set of repeat samples in the manner specified in paragraphs (1) to (3) unless the supplier determines the MCL for total coliforms in section 11-20-6 has been exceeded and notifies the director. The additional samples shall be collected within twenty-four hours of being notified of the positive result, unless the director extends the limit as provided in paragraph (1). The supplier shall repeat this process until either total coliforms are not detected in one complete set of repeat samples or the supplier determines that the MCL for total coliforms in section 11-20-6 has been exceeded and notifies the director.
 - (5) If a supplier collecting fewer than five routine samples per month has one or more total coliform-positive samples and the director does not invalidate the sample(s) under subsection (c), the supplier shall collect at least five routine samples during the next month the system provides water to the public.

- (6) Results of all routine and repeat samples not invalidated by the director shall be included in determining compliance with the MCL for total coliforms in section 11-20-6.
- (c) Invalidation of total coliform samples. A total coliform-positive sample invalidated under this subsection does not count towards meeting the minimum monitoring requirements of this section.
 - (1) The director may invalidate a total coliform-positive sample if one or more of the following are met.
 - (A) The laboratory establishes that improper sample analysis caused the total coliform-positive result.
 - (B) The director, on the basis of the results of repeat samples collected as required by subsection (b)(1) to (4) determines that the total coliform-positive sample resulted from a domestic or other non-distribution system plumbing problem. The director cannot invalidate a sample on the basis of repeat sample results unless all repeat sample(s) collected at the same tap as the original total coliform-positive sample are also total coliform-positive, and all repeat samples collected within five service connections of the original tap are total coliform-negative (e.g., the director cannot invalidate a total coliform-positive sample on the basis of repeat samples if all the repeat samples are total coliform-negative, or if the public water system has only one service connection).
 - (C) The director has substantial grounds to believe that a total coliform-positive result is due to a circumstance or condition which does not reflect water quality in the distribution system. In this case, the supplier shall still collect all repeat samples required under subsection (b)(1) to (4), and use them to determine compliance with the MCL for total coliforms in section 11-20-6. To invalidate a total coliform-positive sample under this paragraph, the decision with the rationale for the decision shall be documented in writing, and approved and signed by the director. The director shall make this document available to EPA and the public. The written documentation shall specify the cause of the total coliform-positive sample, and what action the supplier has taken, or will take, to correct

this problem. The director may not invalidate a total coliform-positive sample solely on the grounds that all repeat samples are total coliform-negative.

- (2) A laboratory shall invalidate a total coliform sample (unless total coliforms are detected) if the sample produces a turbid culture in the absence of gas production using an analytical method where gas formation is examined (e.g., the Multiple-Tube Fermentation Technique), produces a turbid culture in the absence of an acid reaction in the Presence-Absence (P-A) Coliform Test, or exhibits confluent growth or produces colonies too numerous to count with an analytical method using a membrane filter (e.g., Membrane Filter Technique). If a laboratory invalidates a sample because of such interference, the supplier shall collect another sample from the same location as the original sample within twenty-four hours of being notified of the interference problem, and have it analyzed for the presence of total coliforms. The supplier shall continue to re-sample within twenty-four hours and have the samples analyzed until it obtains a valid result. The director may waive the twenty-four hour time limit on a case-by-case basis.
- (d) Sanitary surveys.
- (1) Public water systems which collect four or fewer routine samples per month shall undergo an initial sanitary survey by June 29, 1994 for community public water systems and June 24, 1999 for non-community water systems. Thereafter, systems shall undergo another sanitary survey every five years, except that non-community water systems using only protected and disinfected ground water, as defined by the director, shall undergo subsequent sanitary surveys at least every ten years after the initial sanitary survey. The director shall review the results of each sanitary survey to determine whether the existing monitoring frequency is adequate and what additional measures, if any, the supplier needs to undertake to improve drinking water quality.
- (2) In conducting a sanitary survey of a system using ground water in a state having an EPA-approved wellhead protection program under section 1428 of the Safe Drinking Water Act, information on sources of contamination within the delineated wellhead protection area that was collected in the course of developing and implementing the program should be considered instead of collecting new information, if

- the information was collected since the last time the system was subject to a sanitary survey.
- (3) Sanitary surveys shall be performed by the State or an agent approved by the director. The supplier is responsible for ensuring the survey takes place.
 - (e) Fecal coliforms/*Escherichia coli* (*E. coli*) testing.
 - (1) If any routine or repeat sample is total coliform-positive, the laboratory shall analyze the total coliform-positive culture medium to determine if fecal coliforms or *E. coli* are present.
 - (2) The director has the discretion to allow a supplier of water, on a case-by-case basis, to forgo fecal coliform or *E. coli* testing on a total coliform-positive sample if that supplier classifies the total coliform-positive sample as fecal coliform-positive or *E. coli*-positive. In the event the laboratory fails to perform the required fecal coliform or *E. coli* analysis, the total coliform-positive sample will be classified as fecal coliform positive or *E. coli*-positive.
 - (f) Response to positive result.
 - (1) The supplier shall report the positive result for total coliforms or fecal coliforms or *E. coli* to the director by 4:00 p.m. of the day that the supplier is notified of the positive result. However, if the supplier is notified of the result after 4:00 p.m., then the supplier shall notify the director as soon as possible but no later than 10:00 a.m. of the next department business day.
 - (2) When a public water system has a fecal coliform-positive or *E. coli*-positive result, the supplier shall issue a boil water notice to all affected consumers.
 - (A) The boil water order shall be issued no later than twenty-four hours after the system has been notified of the positive fecal coliform or positive *E. coli* result. The boil water notice shall be in effect until negative total coliform results are obtained from the affected tap and from all other required repeat sample sites.
 - (B) The boil water notice shall not be required if all repeat samples collected are total coliform-negative, and these results are received within twenty-four hours of the fecal-positive or *E. coli*-positive result.
 - (g) Response to violation.
 - (1) When a public water system has exceeded the MCL for total coliforms as set forth in section 11-20-6, the supplier shall report the violation to the director no

- later than the end of the next business day after learning of the violation, and notify the public in accordance with section 11-20-18.
- (2) A supplier who has failed to comply with a coliform monitoring requirement, including the sanitary survey requirement, shall report the monitoring violation to the director within ten days after the supplier discovers the violation, and notify the public in accordance with section 11-20-18.
 - (h) Analytical techniques.
 - (1) The standard sample volume required for total coliform analysis, regardless of analytical method used, is 100 ml.
 - (2) The suppliers need only determine the presence or absence of total coliforms; a determination of total coliform density is not required.
 - (3) Suppliers shall conduct total coliform analyses in accordance with one of the following analytical methods:
 - (A) Total Coliform Fermentation Technique, as set forth in 40 C.F.R. §141.21(f)(3);
 - (B) Total Coliform Membrane Filter Technique, as set forth in 40 C.F.R. §141.21(f)(3);
 - (C) Presence-Absence (P-A) Coliform Test, as set forth in 40 C.F.R. §141.21(f)(3); [or]
 - (D) ONPG-MUG as set forth in 40 C.F.R. §141.21(f)(3);
 - (E) Colisure Test, as set forth in 40 C.F.R. §141.21(f)(3);
 - (F) E*Colite Test, as set forth in 40 C.F.R. §141.21(f)(3); or
 - (G) m-ColiBlue24 Test, as set forth in 40 C.F.R. §141.21(f)(3).
 - (4) (Reserved)
 - (5) Suppliers shall conduct fecal coliform analysis in accordance with the following procedure. When the MTF Technique or Presence-Absence (P-A) Coliform Test is used to test for total coliforms, transfer the total coliform-positive culture using the procedure specified in 40 C.F.R. §141.21 (f)(5). For EPA-approved analytical methods which use a membrane filter, transfer the total coliform-positive culture using the procedure specified in 40 C.F.R. §141.21 (f)(5) for membrane filters. If the ONPG-MUG Test is used to test for total coliforms and the MUG test is positive, the MUG-positive tubes may be classified as fecal coliform positive and further testing is not required. If the ONPG positive tube is MUG negative, EC medium must be used to determine the presence of

- fecal coliforms. Shake the ONPG positive-MUG Negative tube vigorously and transfer the growth with a sterile 3 mm loop or sterile applicator stick into a tube of EC medium to determine the presence of fecal coliforms. Suppliers need only determine the presence or absence of fecal coliforms; a determination of fecal coliform density is not required.
- (6) Suppliers shall conduct *Escherichia coli* (*E. coli*) analysis in accordance with one of the following procedures:
- (A) EC medium supplemented with 50 ug/ml of 4-methylumbelliferyl-beta-D-glucuronide (MUG) (final concentration). EC medium is described in the 18th edition of Standard Methods for the Examination of Water and Wastewater, 1992, Method 9221E-p. 9-52, paragraph 1a. MUG may be added to EC medium before autoclaving. EC medium supplemented with 50 ug/ml of MUG is commercially available. At least 10 ml of EC medium supplemented with MUG must be used. The inner inverted fermentation tube may be omitted. The procedure for transferring a total coliform-positive culture to EC medium supplemented with MUG shall be as specified in paragraph (5) of this section for transferring a total coliform-positive culture to EC medium. Observe fluorescence with an ultraviolet light (366nm) in the dark after incubating tube at 44.5 ± 0.2 °C for 24 ± 2 hours; or
 - (B) Nutrient agar supplemented with 100 ug/ml 4-methylumbelliferyl-beta-D-glucuronide (MUG) (final concentration). Nutrient Agar is described in the 18th edition of Standard Methods for the Examination of Water and Wastewater, 1992, p. 9-47 to 9-48. This test is used to determine if a total coliform-positive sample, as determined by the Membrane Filter Technique or any other method in which a membrane filter is used, contains *E. coli*. Transfer the membrane filter containing a total coliform colony(ies) to nutrient agar supplemented with 100 ug/ml (final concentration) of MUG. After incubating the agar plate at 35 degrees Centigrade for 4 hours, observe the colony(ies) under ultraviolet light (366 nm) in the dark for fluorescence. If fluorescence is visible, *E. coli* are present.
 - (C) Minimal Medium ONPG-MUG (MMO-MUG) Test, as set forth in the article "National Field Evaluation

of a Defined Substrate Method for the Simultaneous Detection of Total Coliforms and Escherichia coli from Drinking Water: Comparison with Presence-Absence Techniques" (Edberg et al.), Applied and Environmental Microbiology, Volume 55, pp.1003-1008, April 1989. (Note: The Autoanalysis Colilert System is an MMO-MUG test). If the MMO-MUG test is total coliform-positive after a 24-hour incubation, test the medium for fluorescence with a 366-nm ultraviolet light (preferably with a 6-watt lamp) in the dark. If fluorescence is observed, the sample is E. coli-positive. If fluorescence is questionable (cannot be definitively read) after 24 hours, incubate the culture for an additional four hours (but not to exceed 28 hours total), and again test the medium for fluorescence. The MMO-MUG Test with hepes buffer in lieu of phosphate buffer is the only approved formulation for the detection of E. coli.

- (D). The Colisure Test. A description of the Colisure Test may be obtained from the Millipore Corporation, Technical Services Department, 80 Ashby Road, Bedford, MA 01730.
- (7) As an option to paragraph (6)(C), a system with a total coliform-positive, MUG-negative, MMO-MUG test may further analyze the culture for the presence of E. coli by transferring a 0.1 ml, 28-hour MMO-MUG culture to EC Medium + MUG with a pipet. The formulation and incubation conditions of EC Medium + MUG, and observation of the results are described in paragraph (6)(A).
- (8) following materials are incorporated by reference in this section with the approval of the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of the analytical methods cited in Standard Methods for the Examination of Water and Wastewater may be obtained from the American Public Health Association et al.; 1015 Fifteenth Street, NW.; Washington DC 20005. Copies of the methods set forth in Microbiological Methods for Monitoring the Environment, Water and Waste may be obtained from ORD Publications, US EPA, 26 W. Martin Luther King Drive, Cincinnati, Ohio 45268. Copies of the MMO-MUG Test as set forth in the article "National Field Evaluation of a Defined Substrate Method for the Simultaneous Enumeration of Total Coliforms and Escherichia coli from Drinking Water: Comparison with the Standard

Multiple Tube Fermentation Method" (Edberg et al.) may be obtained from the American Water Works Association Research Foundation, 6666 West Quincy Avenue, Denver, CO 80235. A description of the Colisure Test may be obtained from the Millipore Corp., Technical Services Department, 80 Ashby Road, Bedford, MA 01730. Copies may be inspected at EPA's Drinking Water Docket; 401 M Street, SW.; Washington, DC 20460, or at the Office of the Federal Register; 800 North Capitol Street, NW., Suite 700, Washington, DC. [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; am and comp 10/13/97; am and comp 9/7/99; am and comp 11/30/2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §141.21, §142.10)

§11-20-10 Turbidity sampling and analytical requirements.

(a) Samples shall be taken by suppliers of water for public water systems using surface water sources in whole or in part. Turbidity measurements shall be made by the Nephelometric Method 2130B cited in the 18th edition of Standard Methods for the Examination of Water and Wastewater, 1992, or by the methods cited in 40 C.F.R. §141.74(a)(1).

(b) The requirements in this subsection apply to filtered surface water systems until June 29, 1993. The requirements in this subsection apply to unfiltered systems until June 29, 1993, or until filtration is installed, whichever is later. The director shall determine, in writing pursuant to 42 U.S.C. §300g-1(b)(7)(C)(iii), which systems must install filtration.

- (1) Samples shall be taken by suppliers of water for public water systems using surface water sources in whole or in part. Samples shall be taken at a representative entry point(s) to the water distribution system at least once per day, for the purpose of making turbidity measurements to determine compliance with section 11-20-5. If the director determines that a reduced sampling frequency in a non-community system will not pose a risk to public health, the director may reduce the required sampling frequency. The option of reducing the turbidity frequency shall be permitted only in those public water systems that practice disinfection and which maintain an active residual disinfectant in the distribution system, and in those cases where the director has indicated in writing that no unreasonable risk to health existed under the circumstances of this option.

- (2) If the result of a turbidity analysis indicates that the maximum allowable limit has been exceeded, the sampling and measurement shall be confirmed by resampling as soon as practicable and preferably within one hour. If the repeat sample confirms that the maximum allowable limit has been exceeded, the supplier of water shall report to the director within forty-eight hours. The repeat sample shall be the sample used for the purpose of calculating the monthly average. If the monthly average of the daily samples exceeds the maximum allowable limit, or if the average of two samples taken on consecutive days exceeds five NTU, the supplier of water shall report to the director and notify the public as directed in sections 11-20-17 and 11-20-18.

(c) After June 29, 1993, samples shall be collected at the filtration plant effluent or immediately prior to entry into the distribution system. Sampling of the plant effluent is acceptable if there are no storage tanks between the sampling point and entry into the distribution system. Continuous monitoring with a turbidimeter and recording chart, or collection of grab samples every four hours is required for conventional treatment, direct, and diatomaceous earth filtration. [Eff 12/26/81 am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; am and comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §141.22, §142.10)

§11-20-11 Inorganic chemical sampling and analytical requirements. (a) Community water systems shall conduct monitoring to determine compliance with the MCLs specified in section 11-20-3 in accordance with this section. Non-transient, non-community water systems shall conduct monitoring to determine compliance with the MCLs specified in section 11-20-3 in accordance with this section. Transient, non-community water systems shall conduct monitoring to determine compliance with the nitrate and nitrite MCLs in section 11-20-3 in accordance with this section. Monitoring shall be conducted as follows:

- (1) Ground water systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a sampling point) beginning in the initial compliance period. The system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.
- (2) Surface water systems shall take a minimum of one sample at every entry point to the distribution system

after any application of treatment or in the distribution system at a point which is representative of each source after treatment (hereafter called a sampling point) beginning in the initial compliance period. The system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

Note: For purposes of this paragraph, surface water systems include systems with a combination of surface and ground sources.

- (3) If a system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water is representative of all sources being used).
- (4) The director may reduce the total number of samples which must be analyzed by allowing the use of compositing. Composite samples from a maximum of five samples are allowed, provided that the detection limit of the method used for analysis is less than one-fifth of the MCL. Compositing of samples must be done in the laboratory.
 - (A) If the concentration in the composite sample is greater than or equal to one-fifth of the MCL of any inorganic chemical, then a follow-up sample must be taken within fourteen days at each sampling point included in the composite. These samples must be analyzed for the contaminants which exceeded one-fifth of the MCL in the composite sample. Detection limits for each analytical method and MCLs for each inorganic contaminant are specified in 40 C.F.R. §141.23(a)(4)(i).
 - (B) If the population served by the system is greater than 3,300 persons, then compositing may only be permitted by the director at sampling points within a single system. In systems serving less than or equal to 3,300 persons, the director may permit compositing among different systems provided the five-sample limit is maintained.
 - (C) If duplicates of the original sample taken from each sampling point used in the composite are available, the system may use these instead of resampling. The duplicates must be analyzed and the results reported to the state within fourteen days of collection.

- (5) The frequency of monitoring for asbestos shall be in accordance with subsection (b); the frequency of monitoring for antimony, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium, and thallium shall be in accordance with subsection (c); the frequency of monitoring for nitrate shall be in accordance with subsection (d); and the frequency of monitoring for nitrite shall be in accordance with subsection (e).
- (b) The frequency of monitoring conducted to determine compliance with the MCL for asbestos specified in section 11-20-3(b) shall be conducted as follows:
 - (1) Each community and non-transient, non-community water system is required to monitor for asbestos during the first three-year compliance period of each nine-year compliance cycle beginning in the compliance period starting January 1, 1993.
 - (2) If the system believes it is not vulnerable to either asbestos contamination in its source water or due to corrosion of asbestos-cement pipe, or both, it may apply to the director for a waiver of the monitoring requirement in paragraph (1). If the director grants the waiver, the system is not required to monitor.
 - (3) The director may grant a waiver based on a consideration of the following factors:
 - (A) Potential asbestos contamination of the water source; and
 - (B) The use of asbestos-cement pipe for finished water distribution and the corrosive nature of the water.
 - (4) A waiver remains in effect until the completion of the three-year compliance period. Systems not receiving a waiver must monitor in accordance with the provisions of paragraph (1).
 - (5) A system vulnerable to asbestos contamination due solely to corrosion of asbestos-cement pipe shall take one sample at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.
 - (6) A system vulnerable to asbestos contamination due solely to source water shall monitor in accordance with the provision of subsection (a).
 - (7) A system vulnerable to asbestos contamination due both to its source water supply and corrosion of asbestos-cement pipe shall take one sample at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.
 - (8) A system which exceeds the MCLs as determined in subsection (i) shall monitor quarterly beginning in

- the next quarter after the violation occurred.
- (9) The director may decrease the quarterly monitoring requirement to the frequency specified in paragraph (1) provided the director has determined that the system is reliably and consistently below the MCL. In no case shall the director make this determination unless a ground water system takes a minimum of two quarterly samples and a surface (or combined surface and ground) water system takes a minimum of four quarterly samples.
 - (10) If monitoring data collected after January 1, 1990 are generally consistent with the requirements of this subsection, then the director may allow systems to use that data to satisfy the monitoring requirement for the initial compliance period beginning January 1, 1993.
- (c) The frequency of monitoring conducted to determine compliance with the MCLs in section 11-20-3 for antimony, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium, and thallium shall be as follows:
- (1) Ground water systems shall take one sample at each sampling point during each compliance period. Surface water systems (or combined surface and ground) shall take one sample annually at each sampling point.
 - (2) The system may apply to the director for a waiver from the monitoring frequencies specified in paragraph (1). States may grant a public water system a waiver for monitoring of cyanide, provided that the director determines that the system is not vulnerable due to lack of any industrial source of cyanide.
 - (3) A condition of the waiver shall require that a system shall take a minimum of one sample while the waiver is effective. The term during which the waiver is effective shall not exceed one compliance cycle (i.e., nine years).
 - (4) The director may grant a waiver provided surface water systems have monitored annually for at least three years and ground water systems have conducted a minimum of three rounds of monitoring. (At least one sample shall have been taken since January 1, 1990). Both surface and ground water systems shall demonstrate that all previous analytical results were less than the MCL. Systems that use a new water source are not eligible for a waiver until three rounds of monitoring from the new source have been completed.
 - (5) In determining the appropriate reduced monitoring frequency, the director shall consider:
 - (A) Reported concentrations from all previous

- monitoring;
 - (B) The degree of variation in reported concentrations; and
 - (C) Other factors which may affect contaminant concentrations such as changes in ground water pumping rates, changes in the system's configuration, changes in the system's operating procedures, or changes in stream flows or characteristics.
- (6) A decision by the director to grant a waiver shall be made in writing and shall set forth the basis for the determination. The determination may be initiated by the director or upon an application by the public water system. The public water system shall specify the basis for its request. The director shall review and, where appropriate, revise its determination of the appropriate monitoring frequency when the system submits new monitoring data or when other data relevant to the system's appropriate monitoring frequency become available.
- (7) Systems which exceed the MCLs as calculated in subsection (i) shall monitor quarterly beginning in the next quarter after the violation occurred.
- (8) The director may decrease the quarterly monitoring requirement to the frequencies specified in paragraphs (1) and (2) provided the director has determined that the system is reliably and consistently below the MCL. In no case shall the director make this determination unless a ground water system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly samples.
- (d) All public water systems (community and non-community systems) shall monitor to determine compliance with the MCL for nitrate in section 11-20-3.
- (1) Community and non-transient, non-community water systems served by ground water systems shall monitor annually beginning January 1, 1993; systems served by surface water shall monitor quarterly beginning January 1, 1993.
 - (2) For community and non-transient, non-community water systems, the repeat monitoring frequency for ground water systems shall be quarterly for at least one year following any one sample in which the concentration is greater than or equal to 50 per cent of the MCL. The director may allow a ground water system to reduce the sampling frequency to annually after four consecutive quarterly samples are reliably and consistently less than the MCL.

- (3) For community and non-transient, non-community water systems, the director may allow a surface water system to reduce the sampling frequency to annually if all analytical results from four consecutive quarters are less than 50 per cent of the MCL. A surface water system shall return to quarterly monitoring if any one sample is greater than or equal to 50 per cent of the MCL.
- (4) Each transient non-community water system shall monitor annually beginning January 1, 1993.
- (5) After the initial round of quarterly sampling is completed, each community and non-transient non-community system which is monitoring annually shall take subsequent samples during the quarter(s) which previously resulted in the highest analytical result.
- (e) All public water systems (community and non-community systems) shall monitor to determine compliance with the MCL for nitrite in section 11-20-3(b).
 - (1) All public water systems shall take one sample at each sampling point in the compliance period beginning January 1, 1993 and ending December 31, 1995.
 - (2) After the initial sample, systems where an analytical result for nitrite is less than 50 per cent of the MCL shall monitor at the frequency specified by the director.
 - (3) For community and non-community water systems, the repeat monitoring frequency for any water system shall be quarterly for at least one year following any one sample in which the concentration is greater than or equal to 50 per cent of the MCL. The director may allow a system to reduce the sampling frequency to annually after determining the system is reliably and consistently less than the MCL.
 - (4) Systems which are monitoring annually shall take each subsequent sample during the quarter(s) which previously resulted in the highest analytical result.
- (f) Confirmation samples:
 - (1) Where the results of sampling for asbestos, antimony, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium, or thallium indicate an exceedance of the MCL, the director may require that one additional sample be collected as soon as possible after the initial sample was taken (but not to exceed two weeks) at the same sampling point.
 - (2) Where nitrate or nitrite sampling results indicate an exceedance of the MCL, the system shall take a confirmation sample within twenty-four hours of the system's receipt of notification of the analytical

results of the first sample. Systems unable to comply with the twenty-four hour sampling requirement must immediately notify the consumers served by the area served by the public water system in accordance with section 11-20-18. Systems exercising this option must take and analyze a confirmation sample within two weeks of notification of the analytical results of the first sample.

- (3) If a director-required confirmation sample is taken for any contaminant, then the results of the initial and confirmation sample shall be averaged. The resulting average shall be used to determine the system's compliance in accordance with subsection (i). The director has the discretion to delete results of obvious sampling errors.
- (g) The director may require more frequent monitoring than specified in subsections (b), (c), (d), and (e) or may require confirmation samples for positive and negative results at his or her discretion.
- (h) Systems may apply to the director to conduct more frequent monitoring than the minimum monitoring frequencies specified in this section.
- (i) Compliance with section 11-20-3 shall be determined based on the analytical result(s) obtained at each sampling point.
- (1) For systems which are conducting monitoring at a frequency greater than annual, compliance with the MCLs for antimony, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium, or thallium is determined by a running annual average at any sampling point. If the average at any sampling point is greater than the MCL, then the system is out of compliance. If any one sample would cause the annual average to be exceeded, then the system is out of compliance immediately. Any sample below the method detection limit shall be calculated at zero for the purpose of determining the annual average.
- (2) For systems which are monitoring annually, or less frequently, the system is out of compliance with the MCLs for asbestos, antimony, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium, or thallium if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required by the director, the determination of compliance will be based on the average of the two samples.
- (3) Compliance with the MCLs for nitrate and nitrite is determined based on one sample if the levels of these contaminants are below the MCLs. If the levels of

- nitrate, nitrite, or both, exceed the MCLs in the initial sample, a confirmation sample is required in accordance with subsection (f)(2), and compliance shall be determined based on the average of the initial and confirmation samples.
- (4) If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the director may allow the system to give public notice to only the area served by that portion of the system which is out of compliance.
 - (j) Each public water system shall monitor at the time designated by the director during each compliance period.
 - (k) Inorganic analysis:
 - (1) Analysis for antimony, asbestos, barium, beryllium, cadmium, chromium, cyanide, mercury, nickel, nitrate, nitrite, selenium, and thallium shall be conducted using the methods specified in 40 C.F.R. §141.23(k)(1), or their equivalent as determined by the EPA.
 - (2) Sample collection for antimony, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium, and thallium under this section shall be conducted using the sample preservation, container, and maximum holding time procedures specified in 40 C.F.R. §141.23(k)(2).
 - (3) Analysis under this section shall only be conducted by laboratories that have been certified by EPA or the director. Laboratories may conduct sample analysis under provisional certification until January 1, 1996. To receive certification to conduct analyses for antimony, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium, and thallium, the laboratory must:
 - (A) Analyze Performance Evaluation samples which include those substances provided by EPA Environmental Monitoring Systems Laboratory or equivalent samples provided by the director; and
 - (B) Achieve quantitative results on the analyses that are within the acceptance limits specified in 40 C.F.R. §141.23(k)(3)(ii).
 - (1) Analyses for the purpose of determining compliance with section 11-20-3 shall be conducted using the requirements specified in subsections (1) through (q).
 - (1) Analyses for all community water systems utilizing surface water sources shall be completed by June 24, 1978. These analyses shall be repeated at yearly intervals.

- (2) Analyses for all community water systems utilizing only ground water sources shall be completed by June 24, 1979. These analyses shall be repeated at three-year intervals.
- (3) For non-community water systems, whether supplied by surface or ground sources, analyses for nitrate shall be completed by December 24, 1980. These analyses shall be repeated at intervals determined by the director.
- (4) The director has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by their sanctioned representatives and agencies.
- (m) If the result of an analysis made under subsection (1) indicates that the level of any contaminant listed in section 11-20-3 exceeds the MCL, the supplier of the water shall report to the director within seven days and initiate three additional analyses at the same sampling point within one month.
- (n) When the average of four analyses made pursuant to subsection (m) rounded to the same number of significant figures as the MCL for the substance in question, exceeds the MCL, the supplier of water shall notify the director pursuant to section 11-20-17 and give notice to the public pursuant to section 11-20-18. Monitoring after public notification shall be at a frequency designated by the director and shall continue until the MCL has not been exceeded in two successive samples or until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.
- (o) The provisions of subsections (m) and (n) notwithstanding, compliance with the MCL for nitrate shall be determined on the basis of the mean of two analyses. When a level exceeding the MCL for nitrate is found, a second analysis shall be initiated within twenty-four hours, and if the mean of the two analyses exceeds the MCL, the supplier of water shall report his findings to the director pursuant to section 11-20-17 and shall notify the public pursuant to section 11-20-18.
- (p) For the initial analyses required by subsection (1)(1), (2) or (3), data for surface waters acquired within one year prior to the effective date and data for ground waters acquired within three years prior to the effective date of this part may be substituted at the discretion of the director.
- (q) (Reserved) [Eff 12/26/81; comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; am and comp 10/13/97; am and comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §141.23, §142.10)

§11-20-12 Organic chemicals other than total trihalomethanes, sampling and analytical requirements.

- (a) (Reserved)
- (b) (Reserved)
- (c) (Reserved)
- (d) (Reserved)

(e) Analysis for the contaminants in section 11-20-4(d) and (e) shall be conducted using the EPA methods cited in 40 C.F.R. §141.24(e), or their equivalent as approved by EPA. Analysis for 1,2,3-trichloropropane shall be conducted using the EPA methods cited in 40 C.F.R. §141.40(g), or their equivalent as determined by EPA.

(f) Beginning with the initial compliance period, analysis of the contaminants listed in section 11-20-4(d) for the purpose of determining compliance with the MCL shall be conducted as follows:

- (1) Ground water systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant or within the distribution system.
- (2) Surface water systems (or combined surface and ground) shall take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.
- (3) If the system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water representative of all sources is being used).
- (4) Each community and non-transient non-community water system shall take four consecutive quarterly samples for each contaminant listed in section 11-20-4(d), with the exception of vinyl chloride, during each compliance period beginning in the initial compliance period.
- (5) If the initial monitoring for benzene, carbon tetrachloride, para-dichlorobenzene, 1,2-dichloroethane, 1,1-dichloroethylene, 1,1,1-trichloroethane, trichloroethylene, and vinyl

- chloride and the monitoring for all of the other contaminants listed in section 11-20-4(d) as allowed in paragraph (18) has been completed by December 31, 1992 and the system did not detect any contaminant listed in section 11-20-4(d) then each ground and surface water system shall take one sample annually beginning with the initial compliance period.
- (6) After a minimum of three years of annual sampling, the director may allow ground water systems which have no previous detection of any contaminant listed in section 11-20-4(d) to take one sample during each compliance period.
 - (7) Each community and non-transient non-community ground water system which does not detect a contaminant listed in section 11-20-4(d) may apply to the director for a waiver from the requirement of paragraphs (5) and (6) after completing the initial monitoring. (For the purposes of this section, detection is defined as greater than or equal to 0.0005 mg/l.) A waiver shall be effective for no more than six years (two compliance periods). States may also issue waivers to small systems for the initial round of monitoring for 1,2,4-trichlorobenzene.
 - (8) The director may grant a waiver after evaluating the following factor(s):
 - (A) Knowledge of previous use (including transport, storage, or disposal) of the contaminant within the watershed or zone of influence of the system. If a determination by the director reveals no previous use of the contaminant within the watershed or zone of influence, a waiver may be granted.
 - (B) If previous use of the contaminant is unknown or it has been used previously, then the following factors shall be used to determine whether a waiver is granted.
 - (i) Previous analytical results.
 - (ii) The proximity of the system to potential point or non-point source of contamination. Point sources include spills and leaks of chemicals at or near a water treatment facility or at manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities.
 - (iii) The environmental persistence and transport of the contaminants.

- (iv) The number of persons served by the public water system and the proximity of a smaller system to a larger system.
 - (v) How well the water source is protected against contamination such as whether it is a surface or ground water system. Ground water systems must consider factors such as depth of the well, the type of soil, and wellhead protection. Surface water systems must consider watershed protection.
- (9) As a condition of the waiver a system must take one sample at each sampling point during the time the waiver is effective (i.e., one sample during two compliance periods or six years), and update its vulnerability assessment considering the factors listed in paragraph (8). Based on this vulnerability assessment the director must reconfirm that the system is non-vulnerable. If the director does not make this reconfirmation within three years of the initial determination, then the waiver is invalidated and the system is required to sample annually as specified in paragraph (5).
- (10) Each community and non-transient non-community surface water system which does not detect a contaminant listed in section 11-20-4(d) may apply to the director for a waiver from the requirements of paragraph (5) after completing the initial monitoring. Composite samples from a maximum of five sampling points are allowed, provided that the detection limit of the method used for analysis is less than one-fifth of the MCL. Systems meeting this criteria must be determined by the director to be non-vulnerable based on a vulnerability assessment during each compliance period. Each system receiving a waiver shall sample at the frequency specified by the director (if any).
- (11) If a contaminant listed in section 11-20-4(d), with the exception of vinyl chloride, is detected at a level exceeding 0.0005 mg/l in any sample, then:
- (A) The system must monitor quarterly at each sampling point which resulted in a detection.
 - (B) The director may decrease the quarterly monitoring requirement specified in subparagraph (A) provided it has determined that the system is reliably and consistently below the MCL. In no case shall the director make this determination unless a ground water system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly

- samples.
- (C) If the director determines that the system is reliably and consistently below the MCL, the director may allow the system to monitor annually. Systems which monitor annually must monitor during the quarter(s) which previously yielded the highest analytical result.
 - (D) Systems which have three consecutive annual samples with no detection of a contaminant may apply to the director for a waiver as specified in paragraph (7).
 - (E) Ground water systems which have detected one or more of the following two-carbon organic compounds: trichloroethylene, tetrachloroethylene, 1-2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene shall monitor quarterly for vinyl chloride. A vinyl chloride sample shall be taken at each sampling point at which one or more of the two-carbon organic compounds was detected. If the results of the first analysis do not detect vinyl chloride, the director may reduce the quarterly monitoring frequency of vinyl chloride monitoring to one sample during each compliance period. Surface water systems are required to monitor for vinyl chloride as specified by the director.
- (12) Systems which violate the requirements of section 11-20-4(d) as determined by paragraph (15) must monitor quarterly. After a minimum of four consecutive quarterly samples which show the system is in compliance as specified in paragraph (15), and the director determines that the system is reliably and consistently below the MCL, the system may monitor at the frequency and time specified in paragraph (11)(C).
 - (13) The director may require a confirmation sample for positive or negative results. If a confirmation sample is required by the director, the result must be averaged with the first sampling result and the average is used for the compliance determination as specified by paragraph (15). The director has discretion to delete results of obvious sampling errors from this calculation.
 - (14) The director may reduce the total number of samples a system must analyze by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed, provided that the detection limit of the method used for analysis is

less than one-fifth of the MCL. Compositing of samples must be done in the laboratory and analyzed within fourteen days of sample collection.

- (A) If the concentration in the composite sample is greater than or equal to 0.0005 mg/l for any contaminant listed in section 11-20-4(d), then a follow-up sample must be taken within fourteen days at each sampling point included in the composite, and be analyzed for that contaminant.
 - (B) Duplicates may be analyzed as specified by section 11-20-11(a)(4)(C).
 - (C) Compositing based on population served by the system shall be performed as specified in section 11-20-11(a)(4)(B).
 - (D) Compositing samples prior to GC analysis shall be performed as specified in 40 C.F.R. §141.24(f)(14)(iv).
- (15) Compliance with section 11-20-4(d) shall be determined based on the analytical results obtained at each sampling point.
- (A) For systems which are conducting monitoring at a frequency greater than annual, compliance is determined by a running annual average of all samples taken at each sampling point. If the annual average of any sampling point is greater than the MCL, then the system is out of compliance. If the initial sample or a subsequent sample would cause the annual average to be exceeded, then the system is out of compliance immediately.
 - (B) If monitoring is conducted annually, or less frequently, the system is out of compliance if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required by the director, the determination of compliance will be based on the average of two samples.
 - (C) If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the director may allow the system to give public notice to only that area served by that portion of the system which is out of compliance.
- (16) (Reserved)
- (17) Analysis under this section shall only be conducted by laboratories that are certified by EPA or the director according to the conditions as specified in 40 C.F.R. §141.24(f)(17).

- (18) The director may allow the use of monitoring data collected after January 1, 1988 required under section 1445 of the Safe Drinking Water Act for purposes of initial monitoring compliance. If the data are generally consistent with the other requirements in this section, the director may use those data (i.e., a single sample rather than four quarterly samples) to satisfy the initial monitoring requirement of paragraph (4). Systems which use grandfathered samples and did not detect any contaminant listed in section 11-20-4(d) shall begin monitoring annually in accordance with paragraph (5) beginning with the initial compliance period.
- (19) The director may increase required monitoring where necessary to detect variations within the system.
- (20) Each certified laboratory must determine the method detection limit (MDL), as defined in Appendix B of Part 136 of 40 C.F.R. 141, at which it is capable of detecting VOCs. The acceptable method detection limit is 0.0005 mg/l. This concentration is the detection concentration for purposes of this section.
- (21) Each public water system shall monitor at the time designated by the director within each compliance period.
- (g) (Reserved)
- (h) Analysis of the contaminants listed in section 11-20-4(e) for the purposes of determining compliance with the MCL shall be conducted as follows:
 - (1) Ground water systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.
 - (2) Surface water systems shall take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

Note: For purposes of this paragraph, surface water systems include systems with a combination of surface and ground sources.

- (3) If the system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water representative of all sources is being used).
- (4) Monitoring frequency:
 - (A) Each community and non-transient non-community water system shall take four consecutive quarterly samples for each contaminant listed in section 11-20-4(e) during each compliance period beginning with the initial compliance period.
 - (B) Systems serving more than 3,300 persons which do not detect a contaminant in the initial compliance period may reduce the sampling frequency to a minimum of two quarterly samples in one year during each repeat compliance period.
 - (C) Systems serving 3,300 persons or less which do not detect a contaminant in the initial compliance period may reduce the sampling frequency to a minimum of one sample during each repeat compliance period.
- (5) Each community and non-transient water system may apply to the director for a waiver from the requirement of paragraph (4). A system must reapply for a waiver for each compliance period.
- (6) The director may grant a waiver after evaluating the following factor(s): Knowledge of previous use (including transport, storage or disposal) of the contaminant within the watershed or zone of influence of the system. If a determination by the director reveals no previous use of the contaminant within the watershed or zone of influence, a waiver may be granted. If previous use of the contaminant is unknown or it has been used previously, then the following factors shall be used to determine whether a waiver is granted.
 - (A) Previous analytical results.
 - (B) The proximity of the system to a potential point or non-point source of contamination. Point sources include spills and leaks of chemicals at or near a water treatment facility or at manufacturing distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities. Non-point sources include the use of pesticides to control insect and weed pests on agricultural areas, forest lands, home

- and gardens, and other land application uses.
- (C) The environmental persistence and transport of the pesticide or PCBs.
- (D) How well the water source is protected against contamination due to such factors as depth of the well and the type of soil and the integrity of the well casing.
- (E) Elevated nitrate levels at the water supply source.
- (F) Use of PCBs in equipment used in the production, storage, or distribution of water (i.e., PCBs used in pumps, transformers, etc.).
- (7) If an organic contaminant listed in section 11-20-4(e) is detected (as defined by paragraph (18)) in any sample, then:
 - (A) Each system must monitor quarterly at each sampling point which resulted in a detection.
 - (B) The director may decrease the quarterly monitoring requirement specified in subparagraph (A) provided it has determined that the system is reliably and consistently below the MCL. In no case shall the director make this determination unless a ground water system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly samples.
 - (C) After the director determines the system is reliably and consistently below the MCL, the director may allow the system to monitor annually. Systems which monitor annually must monitor during the quarter that previously yielded the highest analytical result.
 - (D) Systems which have three consecutive annual samples with no detection of a contaminant may apply to the director for a waiver as specified in paragraph (6).
 - (E) If monitoring results in detection of one or more of certain related contaminants (aldicarb, aldicarb sulfone, aldicarb sulfoxide and heptachlor, heptachlor epoxide), then subsequent monitoring shall analyze for all related contaminants.
- (8) Systems which violate the requirements of section 11-20-4(e) as determined by paragraph (11) must monitor quarterly. After a minimum of four quarterly samples show the system is in compliance and the director determines the system is reliably and consistently below the MCL, as specified in paragraph (11), the system shall monitor at the frequency

- specified in paragraph (7) (C).
- (9) The director may require a confirmation sample for positive or negative results. If a confirmation sample is required by the director, the result must be averaged with the first sampling result and the average used for the compliance determination as specified by paragraph (11). The director has discretion to delete results of obvious sampling errors from this calculation.
 - (10) The director may reduce the total number of samples a system must analyze by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed, provided that the detection limit of the method used for analysis is less than one-fifth of the MCL. Compositing of samples must be done in the laboratory and analyzed within fourteen days of sample collection.
 - (A) If the concentration in the composite sample detects one or more contaminants listed in section 11-20-4(e), then a follow-up sample must be taken within fourteen days at each sampling point included in the composite, and be analyzed for that contaminant.
 - (B) Duplicates may be analyzed as specified in section 11-20-11(a) (4) (C).
 - (C) Compositing based on population served by the system shall be performed as specified in section 11-20-11(a) (4) (B).
 - (11) Compliance with section 11-20-4(e) shall be determined based on the analytical results obtained at each sampling point.
 - (A) For systems which are conducting monitoring at a frequency greater than annual, compliance is determined by a running annual average of all samples taken at each sampling point. If the annual average of any sampling point is greater than the MCL, then the system is out of compliance. If the initial sample or a subsequent sample would cause the annual average to be exceeded, then the system is out of compliance immediately. Any samples below the detection limit shall be calculated as zero for purposes of determining the annual average.
 - (B) If monitoring is conducted annually, or less frequently, the system is out of compliance if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required by the director, the determination of compliance will be based on the

average of two samples.

- (C) If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the director may allow the system to give public notice to only that portion of the system which is out of compliance.
- (12) (Reserved)
- (13) Analysis for PCBs shall be conducted as specified in 40 C.F.R. §141.24(h)(13).
- (14) If monitoring data collected after January 1, 1990, are generally consistent with the requirements of this subsection then the director may allow systems to use that data to satisfy the monitoring requirement for the initial compliance period beginning January 1, 1993.
- (15) The director may increase the required monitoring frequency, where necessary, to detect variations within the system (e.g., fluctuations in concentration due to seasonal use, changes in water source).
- (16) The director has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by his or her sanctioned representatives and agencies.
- (17) Each public water system shall monitor at the time designated by the director within each compliance period.
- (18) Detection as used in this paragraph shall be defined as greater than or equal to the concentrations for each contaminant specified in 40 C.F.R. §141.24(h)(18)
- (19) Analysis under this section shall only be conducted by laboratories that have received certification by EPA or the director and have met the conditions as specified in 40 C.F.R. §141.24(h)(19). [Eff 12/16/81; am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; am and comp 10/13/97; am and comp 9/7/99; am and comp **NOV 30 2002**] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2, 300g-3, 300j-4, 300g-6, and 300j-9; 40 C.F.R. Parts 141, 142, §141.24, §142.10)

§11-20-13 Radionuclide sampling and analytical requirements. (a) Analytical methods for radioactivity.

- (1) The methods specified in 40 C.F.R., §141.25, are to be used to determine compliance with sections 11-20-7(a) and 11-20-7(b) (radioactivity), except in cases where alternative methods have been approved in accordance with section 11-20-14.

- (2) For the purpose of monitoring radioactivity concentrations in drinking water, the required sensitivity of the radioanalysis is defined in terms of a detection limit. The detection limit shall be that concentration which can be counted with a precision of plus or minus one hundred per cent at the ninety-five per cent confidence level (1.96σ where σ is the standard deviation of the net counting rate of the sample).

- (A) To determine compliance with section 11-20-7(a)(1), the detection limit shall not exceed one pCi/l. To determine compliance with section 11-20-7(a)(2), the detection limit shall not exceed three pCi/l.
- (B) To determine compliance with section 11-20-7(b), the detection limits shall not exceed the concentrations listed in Table B.

Table B
Detection Limits for Man-Made
Beta Particle and Photon Emitters

Radionuclide	Detection Limit	CAS #
Tritium -----	1,000 pCi/l.	10028-17-8
Strontium-89 -----	10 pCi/l.	14158-27-1
Strontium-90 -----	2 pCi/l.	10098-97-2
Iodine-131 -----	1 pCi/l.	10043-66-0
Cesium-134 -----	10 pCi/l.	13967-70-9
Gross beta -----	4 pCi/l.	
Other radionuclides -----	1/10 of the applicable limit.	

- (3) To judge compliance with the MCL listed in sections 11-20-7(a) and 11-20-7(b), averages of data shall be used and shall be rounded to the same number of significant figures as the MCL for the substance in question.
- (b) Monitoring frequency for radioactivity in community water systems.
- (1) Monitoring requirements for gross alpha particle activity, radium-226 and radium-228 are as follows:
- (A) Compliance with section 11-20-7(a) shall be based on the analysis of an annual composite of four consecutive quarterly samples or the average of the analyses of four samples obtained at quarterly intervals.
- (i) A gross alpha particle activity measurement may be substituted for the

- required radium-226 and radium-228 analysis provided, that the measured gross alpha particle activity does not exceed five pCi/l at a confidence level of ninety-five per cent (1.65σ where σ is the standard deviation of the net counting rate of the sample). In localities where radium-228 may be present in drinking water, the director may require radium-226 and radium-228 analyses when the gross alpha particle activity exceeds two pCi/l.
- (ii) When the gross alpha particle activity exceeds five pCi/l, the same or an equivalent sample shall be analyzed for radium-226. If the concentration of radium-226 exceeds three pCi/l the same sample or an equivalent sample shall be analyzed for radium-228.
- (B) Suppliers of water shall monitor at least once every four years following the procedure required by subparagraph (A). At the discretion of the director, when an annual record taken in conformance with subparagraph (A), has established that the average annual concentration is less than half the MCL established by section 11-20-7(a), analysis of a single sample may be substituted for the quarterly sampling procedure required by subparagraph (A).
- (i) More frequent monitoring shall be conducted when ordered by the director in the vicinity of mining or other operations which may contribute alpha particle radioactivity to either surface or ground water sources of drinking water.
 - (ii) A supplier of water shall monitor in conformance with subparagraph (A) within one year of the introduction of a new water source for a community water system. More frequent monitoring shall be conducted when ordered by the director in the event of possible contamination or when changes in the distribution system or treatment processing occur which may increase the concentration of radioactivity in finished water.
 - (iii) A community water system using two or more sources having different concentrations of radioactivity shall monitor source water,

- in addition to water from a free-flowing tap, when ordered by the director.
- (iv) Monitoring for compliance with section 11-20-7(a) after the initial period need not include radium-228 except when required by the director, provided, that the average annual concentration of radium-228 has been assayed at least once using the quarterly sampling procedure required by subparagraph (A).
 - (v) Suppliers of water shall conduct annual monitoring of any community water system in which the radium-226 concentration exceeds three pCi/l, when ordered by the director.
- (C) If the average annual MCL for gross alpha particle activity or total radium as set forth in section 11-20-7(a) is exceeded, the supplier of a community water system shall give notice to the director pursuant to section 11-20-17 and notify the public as required by section 11-20-18. Monitoring at quarterly intervals shall be continued until the annual average concentration no longer exceeds the MCL or until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.
- (2) Monitoring requirements for man-made radioactivity in community water systems are as follows:
- (A) Systems using surface water sources and serving more than 100,000 persons and such other community water systems as are designated by the director shall be monitored for compliance with section 11-20-7(b) by analysis of a composite of four consecutive quarterly samples or analysis of four quarterly samples. Compliance with section 11-20-7(b) may be assumed without further analysis if the average annual concentration of gross beta particle activity is less than fifty pCi/l and if the average annual concentrations of tritium and strontium-90 are less than those listed in Table A, provided, that if both radionuclides are present the sum of their annual dose equivalents to bone marrow shall not exceed four millirem/year.
 - (i) If the gross beta particle activity exceeds fifty pCi/l, an analysis of the samples shall be performed to identify the major radioactive constituents present and

- the appropriate organ and total body doses shall be calculated to determine compliance with section 11-20-7(b).
- (ii) Suppliers of water shall conduct additional monitoring, as ordered by the director, to determine the concentration of man-made radioactivity in principal watersheds designated by the director.
 - (iii) At the discretion of the director, suppliers of water utilizing only ground waters may be required to monitor for man-made radioactivity.
- (B) After the initial analysis required by subparagraph (A), suppliers of water shall monitor at least every four years following the procedure given in that subparagraph.
- (C) The supplier of any community water system designated by the director as utilizing waters contaminated by effluents from nuclear facilities shall initiate quarterly monitoring for gross beta particle and iodine-131 radioactivity and annual monitoring for strontium-90 and tritium.
- (i) Quarterly monitoring for gross beta particle activity shall be based on the analysis of monthly samples or the analysis of a composite of three monthly samples. The former is recommended. If the gross beta particle activity in a sample exceeds fifteen pCi/l, the same or an equivalent sample shall be analyzed for strontium-89 and cesium-134. If the gross beta particle activity exceeds fifty pCi/l, an analysis of the sample shall be performed to identify the major radioactive constituents present and the appropriate organ and total body doses shall be calculated to determine compliance with section 11-20-7(b).
 - (ii) For iodine-131, a composite of five consecutive daily samples shall be analyzed once each quarter. As ordered by the director, more frequent monitoring shall be conducted when iodine-131 is identified in the finished water.
 - (iii) Annual monitoring for strontium-90 and tritium shall be conducted by means of the analysis of a composite of four consecutive quarterly samples or analysis

- of four quarterly samples. The latter procedure is recommended.
- (iv) The director may allow the substitution of environmental surveillance data taken in conjunction with a nuclear facility for direct monitoring of man-made radioactivity by the supplier of water where the director determines such data is applicable to a particular community water system.
- (v) If the average annual MCL for man-made radioactivity set forth in section 11-20-7(b) is exceeded, the operator of a community water system shall notify the director pursuant to section 11-20-17 and shall notify the public as required by section 11-20-18. Monitoring at monthly intervals shall be continued until the concentration no longer exceeds the MCL or until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective. [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; am and comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §141.25, §141.26, §142.10)

§11-20-14 Alternative analytical techniques. With the written permission of the director, concurred with by the administrator, an alternative analytical technique may be employed. An alternative technique shall be acceptable only if it is substantially equivalent to the prescribed test in both precision and accuracy as it relates to the determination of compliance with any MCL. The use of the alternative analytical technique shall not decrease the frequency of monitoring required by this chapter. [Eff 12/26/81; comp 3/7/92; comp 1/2/93; comp 12/15/94; am and comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §141.27, §142.10)

§11-20-15 Certified laboratories. (a) For the purpose of determining compliance with sections 11-20-9 through 11-20-13, 11-20-34, and 11-20-35, samples may be considered only if they have been analyzed by a laboratory certified by the director as specified in EPA 815-B-97-001, "Manual for the Certification of Laboratories Analyzing Drinking Water", 4th Edition, March 1997, except that measurements for turbidity, free chlorine residual, temperature and pH may be performed by any person acceptable to the director.

(b) Nothing in this chapter shall be construed to preclude the director from taking samples or from using the results from such samples to determine compliance by a supplier of water with the applicable requirements of this chapter. [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; am and comp 10/13/97; comp 9/7/99; am and comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §141.28, §142.10)

§11-20-16 Monitoring of consecutive public water systems. When a public water system supplies water to one or more other public water systems, the director may modify the monitoring requirements imposed by this chapter to the extent that the inter-connection of the public water systems justifies treating them as a single public water system for monitoring purposes. Any modified monitoring shall be conducted pursuant to a schedule specified by the director. [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; comp 12/15/95; comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §141.29, §142.10)

§11-20-17 Reporting requirements. (a) Except where a shorter period is specified in this chapter, the supplier of water shall report to the director the results of any test measurements or analysis required by this chapter:

- (1) Within the first ten days following the month in which the result is received; or
- (2) Within the first ten days following the end of the required monitoring period as stipulated by the director, whichever of these is shortest.

(b) Except where a different reporting period is specified in this chapter, the supplier of water shall report to the director within forty-eight hours the failure to comply with any primary drinking water regulations (including failure to comply with monitoring requirements) set forth in this chapter.

(c) The supplier of water need not report analytical results to the director in cases where a state laboratory performs

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the analysis and reports the results to the director's office which would normally receive such notification from the supplier.

(d) The supplier of water, within ten days of completion of each public notification required pursuant to section 11-20-18, shall submit to the director a representative copy of each type of notice distributed, published, posted, made available to the persons served by the public water system, and to the media.

(e) The supplier of water shall submit to the director within the time stated in the request copies of any records required to be maintained under section 11-20-19 hereof or copies of any documents then in existence which the director or the administrator is entitled to inspect pursuant to the authority of P.L. No. 95-10, §1445, or chapter 340E, HRS.

(f) The supplier of water shall report information requested by the State in a format approved by the director. [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; am and comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-6, 340E-9; 42 U.S.C. §§300g-1, 300g-2, 300g-4; 40 C.F.R. Parts 141, 142, §141.31, §142.10)

§11-20-18 Public notification. (a) The supplier of water which fails to comply with an applicable MCL or treatment technique established by this chapter or which fails to comply with the requirements of any schedule prescribed pursuant to a variance or exemption, shall notify persons served by the public water system as follows:

(1) Except as provided in paragraph (3), the supplier of water shall give notice:

- (A) By publication in a daily newspaper of general circulation in the area served by the public water system as soon as possible, but in no case later than fourteen calendar days after the violation. If the area served by a public water system is not served by a daily newspaper of general circulation, notice shall instead be given by publication in a weekly newspaper of general circulation serving the area;
- (B) By mail delivery (by direct mail or with the water bill), or by hand delivery, not later than forty-five calendar days after the violation or failure. The director may waive mail or hand delivery if he or she determines that the supplier of water of the public water system in violation has corrected the violation or failure within the forty-five calendar day period. The director shall make the waiver in writing and within the forty-five calendar day period; and

- (C) For violations of the MCLs of contaminants or MRDLs of disinfectants that may pose an acute risk to human health, by furnishing a copy of the notice to the radio and television stations serving the area served by the public water system as soon as possible but in no case later than seventy-two hours after the violation. The following violations are acute violations:
 - (i) Violations determined by the director as posing an acute risk to human health.
 - (ii) Violation of the MCL for nitrate or nitrite as defined in section 11-20-3 and determined according to section 11-20-11(i)(3).
 - (iii) Violation of the MCL for total coliforms, when fecal coliforms or E. coli are present in the water distribution system, as specified in section 11-20-6(b).
 - (iv) Violation of the MRDL for chlorine dioxide as defined in section 11-20-7.5 and determined according to section 11-20-45.1(d)(3)(B).
- (2) Except as provided in paragraph (3), following the initial notice given under paragraph (1), the supplier of water shall give notice at least once every three months by mail delivery (by direct mail or with the water bill) or by hand delivery, for as long as the violation or failure exists.
- (3) (A) For a community water system, in lieu of the requirements of paragraphs (1) and (2), the supplier of a water system in an area that does not have local radio and television reception shall give notice by hand delivery or by continuous posting in conspicuous places within the area served by the public water system. Notice by hand delivery or posting shall begin as soon as possible, but no later than seventy-two hours after the violation or failure for acute violations (as defined in subparagraph (1)(C)). The supplier of a water system in an area that is not served by a daily or weekly newspaper shall give notice by hand delivery or by continuous posting as soon as possible, but no later than fourteen calendar days after the violation or failure. Posting shall continue for as long as the violation or failure exists. Notice by hand delivery shall be repeated at least every three months for as long as the violation or failure exists.

(B) For a non-community water system, in lieu of the requirements of paragraphs (1) and (2), the supplier of a water system may give notice by hand delivery or by continuous posting in conspicuous places within the area served by the public water system. Notice by hand delivery or posting shall begin as soon as possible, but no later than seventy-two hours after the violation or failure for acute violations (as defined in subparagraph (1)(C)), or fourteen calendar days after the violation or failure (for any other violation). Posting shall continue for as long as the violation or failure exists. Notice by hand delivery shall be repeated at least every three months for as long as the violation exists.

(b) The supplier of water who fails to perform the monitoring requirements, fails to comply with the testing procedures, or operates under a variance or exemption, shall notify person served by the public water system as follows:

- (1) Except as provided in paragraph (3), the supplier of water shall give notice within three months of the violation or granting of a variance or exemption by publication in a daily newspaper of general circulation in the area served by the public water system. If the area served by a public water system is not served by a daily newspaper of general circulation, notice shall instead be given by publication in a weekly newspaper of general circulation serving the area.
- (2) Except as provided in paragraph (3) following the initial notice given under paragraph (1), the supplier of water shall give notice at least once every three months by mail delivery (by direct mail or with the water bill) or by hand delivery, for as long as the violation exists. Repeat notice of the existence of a variance or exemption shall be given every three months for as long as the variance or exemption remains in effect.
- (3) (A) In lieu of the requirements of paragraphs (1) and (2), the supplier of water of a community water system, in an area that is not served by a daily or weekly newspaper of general circulation shall give notice, within three months of the violation or granting of the variance or exemption, by hand delivery or by continuous posting in conspicuous places with the area served by the public water system. Posting shall continue for as long as the violation

exists or a variance or exemption remains in effect. Notice by hand delivery shall be repeated at least every three months for as long as the violation exists or a variance or exemption remains in effect.

- (B) In lieu of the requirements of paragraphs (1) and (2), the supplier of water of a non-community water system may give notice, within three months of the violation or the granting of the variance or exemption, by hand delivery or by continuous posting in conspicuous places within the area served by the public water system. Posting shall continue for as long as the violation exists, or a variance or exemption remains in effect. Notice by hand delivery shall be repeated at least every three months for as long as the violation exists or a variance or exemption remains in effect.

(c) The supplier of water of a community water system shall give a copy of the most recent public notice for any outstanding violation of any MCL, or any maximum residual disinfectant level, or any treatment technique requirement, or any variance or exemption schedule to all new billing units or new hookups prior to or at the time service begins.

(d) Each notice required by this section shall provide a clear and readily understandable explanation of the violation, any potential adverse health effects, the population at risk, the steps that the public water system is taking to correct such violation, the necessity for seeking alternative water supplies, if any, and any preventive measures the consumer should take until the violation is corrected. Each notice shall be conspicuous and shall not contain unduly technical language, unduly small print, or similar problems that frustrate the purpose of the notice. Each notice shall include the telephone number of the supplier of water for the public water system as a source of additional information concerning the notice. Where appropriate, the notice shall be multi-lingual.

(e) When providing the information on potential health effects required by subsection (d) in public notices of violations of MCLs, violations of treatment techniques, notices of issuance and continued existence of exemptions and variances from MCLs, and notices of violation of variance and exemption schedules, the supplier of water of a public water system shall include the language specified in Appendix A for each contaminant. The exhibit entitled "Appendix A: Mandatory Language to Include in Public Notices (December 1, 1995)" at the end of this chapter is made a part of this chapter.

- (f) Public notices for fluoride.

- (1) Notice of violations of the MCL for fluoride, notices of variances and exemptions from the MCL for fluoride, and notices of failure to comply with variance and exemption schedules for the MCL for fluoride shall consist of the public notice prescribed in Appendix A, number (9), plus a description of any steps which the system is taking to come into compliance.
- (2) Community water systems that exceed the secondary MCL for fluoride of 2.0 mg/l, as determined by the last single sample taken in accordance with the requirements of section 11-20-11(a) through (k), but do not exceed the MCL for fluoride as specified by section 11-20-3(b), shall provide the notice described in Appendix A, number (9) to all billing units annually, all new billing units at the time service begins, and the state public health officer.
- (g) Public notification by the director. The director may give notice to the public required by this section on behalf of the owner or operator of the public water system if the director complies with the requirements of this section. However, the owner or operator of the public water system remains legally responsible for ensuring that the requirements of this section are met. [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; am and comp 10/13/97; am and comp 9/7/99; am and comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-6, 340E-9; 42 U.S.C. §§300g-1, 300g-2, 300g-3, 300g-4, 300g-6, 300j-4, 300j-9; 40 C.F.R. Parts 141, 142, §141.32, §142.10, §143.5)

§11-20-19 Record maintenance. (a) Any supplier of water of a public water system subject to the provisions of this chapter shall retain on its premises or at a convenient location near its premises the records specified in subsections (b) through (f).

(b) Records of bacteriological analyses made pursuant to this chapter shall be kept for not less than five years. Records of chemical analyses made pursuant to this chapter shall be kept for not less than ten years. Actual laboratory reports may be kept, or data may be transferred to tabular summaries, provided that the following information is included:

- (1) The date, place, and time of sampling, and the name of the person who collected the sample;
- (2) Identification of the sample as to whether it was a routine distribution system sample, check sample, raw or process water sample or other special purpose sample;
- (3) Date of analysis;
- (4) Laboratory and person responsible for performing analysis;

- (5) The analytical technique or method used; and
- (6) The results of the analysis.
- (c) Records of action taken by the public water system to correct violations of primary drinking water regulations shall be kept for a period not less than three years after the last action taken with respect to the particular violation involved.
- (d) Copies of any written reports, summaries or communications relating to sanitary surveys of the public water system shall be kept for a period of not less than ten years after completion of the sanitary survey involved.
- (e) Records concerning a variance or exemption granted to the public water system shall be kept for a period ending not less than five years following the expiration of such variance or exemption.
- (f) Records of any public notification made pursuant to section 11-20-18 shall be kept for a period ending not less than five years following the date of such notification. [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; comp 12/15/94; comp 10/13/97; comp 9/7/99; comp NOV 30 2004] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2, 300g-4; 40 C.F.R. Parts 141, 142, §141.33, §142.10, §142.16)

§11-20-20 Requirements for a variance. (a) The director may grant one or more variances to any public water system from any MCL requirement of an applicable state primary drinking water regulation upon a finding that:

- (1) Because of characteristics of the raw water sources which are reasonably available to the public water system, the public water system cannot meet the MCL requirement despite application of the best technology, treatment techniques, or other means, which the director finds are generally available (taking costs into consideration); and
 - (2) The granting of a variance will not result in an unreasonable risk to the health of persons served by the public water system.
- (b) The director may grant one or more variances to any public water system from any requirement of a specified treatment technique of an applicable state primary drinking water regulation upon a finding that the public water system applying for the variance has demonstrated that such treatment technique is not necessary to protect the health of persons because of the nature of the raw water source of such public water system.
- (c) The director will not grant any variance from the filtration and disinfection criteria.
- (d) The director will not grant any variance from the MCL for total coliform. [Eff 12/26/81; am and comp 3/7/92; am and

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comp 1/2/93; comp 12/15/94; comp 10/13/97; comp 9/7/99;
comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS
§§340E-2, 340E-3, 340E-9; 42 U.S.C. §§300g-1, 300g-2, 300g-4; 40
C.F.R. Parts 141, 142, §141.4, §142.10, §142.20)

§11-20-21 Variance request. (a) A supplier of water seeking a variance shall submit a written request to the director. Suppliers of water may submit a joint request for variances when they seek similar variances under similar circumstances. Any written request for a variance or variances shall include the following information:

- (1) The nature and duration of variance requested; and
 - (2) Relevant analytical results of water quality sampling of the public water system, including sampling of raw water relevant to the variance request.
- (b) For any request made under section 11-20-20(a), the following shall be required:
- (1) Full discussion of, and supporting data regarding, the best available treatment technology and techniques, including evidence of the inability of the public water system to comply despite the application of such technology and techniques;
 - (2) Information on economic and legal factors relevant to the ability to comply;
 - (3) A proposed compliance schedule, including the dates for achieving each step in the compliance schedule. Such schedule shall include as a minimum the following dates:
 - (A) Date by which arrangement for alternative raw water source or for improvement of existing raw water source will be completed;
 - (B) Date by which the connection of the alternative raw water source or improvement of existing raw water source will be initiated; and
 - (C) Date by which final compliance is to be achieved;
 - (4) A plan for the provision of safe drinking water in the case of an excessive rise in the contaminant level for which the variance is requested; and
 - (5) A plan for interim control measures during the effective period of variance.
- (c) For any request made under section 11-20-20(b) a statement that the public water system will perform monitoring and other reasonable requirements prescribed by the director as a condition to the variance.
- (d) Any other information the applicant believes to be pertinent.

(e) Such other information as the director may require to minimize the risk to human health or welfare. [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-3, 340E-9; 42 U.S.C. §§300g-1, 300g-4; 40 C.F.R. Parts 141, 141.4, 142, §142.10, §142.20)

§11-20-22 Consideration of variance request. (a) In the director's consideration of whether the public water system is unable to comply with a contaminant level requirement of a state primary drinking water regulation because of the nature of the raw water source, the director shall consider such factors as he considers to be relevant, including the following:

- (1) The availability, effectiveness, and reliability of treatment methods for the contaminant for which the variance is requested; and
- (2) Cost and other economic considerations such as for implementing treatment, improving the quality of the source water or using an alternate source.

(b) In the director's consideration of whether a public water system should be granted a variance to a required treatment technique because such treatment is unnecessary to protect the public health, the director shall consider such factors as the following:

- (1) Quality of the water source including water quality data and pertinent sources of pollution; and
- (2) Susceptibility of the source to contamination and the source protection measures employed by the public water system. [Eff 12/26/81; comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-3, 340E-9; 42 U.S.C. §§300g-1, 300g-2, 300g-4; 40 C.F.R. Parts 141, 142, §141.4, §142.10, §142.20)

§11-20-23 Requirements for an exemption. (a) The director may exempt any public water system from any MCL requirement or any treatment technique requirement, or from both, of an applicable state primary drinking water regulation upon a finding that:

- (1) Due to compelling factors (which may include economic factors), the public water system is unable to comply with such contaminant level or treatment technique requirement;
- (2) The public water system was in operation on the effective date of such contaminant level or treatment technique requirement; and

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- (3) The granting of the exemption will not result in an unreasonable risk to health.
- (b) The director will not exempt any surface water system or a ground water system under the direct influence of surface water from the requirements to provide disinfection for the water entering the distribution system.
- (c) The director will not grant any exemptions to the MCL for total coliform. [Eff 12/26/81; comp 3/7/92; am and comp 1/2/93; comp 12/15/94; comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-3, 340E-9; 42 U.S.C. §§300g-1, 300g-2, 300g-5; 40 C.F.R. Parts 141, 142, §141.4, §142.10, §142.20)

§11-20-24 Exemption request. A supplier of water seeking an exemption shall submit a written request to the director. Suppliers of water may submit a joint request for exemptions when they seek similar exemptions under similar circumstances. Any written request for an exemption or exemptions shall include the following information:

- (1) The nature and duration of exemption requested;
- (2) Relevant analytical results of water quality sampling of the public water system;
- (3) Explanation of the compelling factors such as time or economic factors which prevent such public water system from achieving compliance;
- (4) A proposed compliance schedule, including the date when each step toward compliance will be achieved;
- (5) Any other information the applicant believes to be pertinent; and
- (6) Such other information as the director may require to minimize the risk to human health and welfare. [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-3, 340E-9; 42 U.S.C. §§300g-1, 300g-2, 300g-5; 40 C.F.R. Parts 141, 142, §141.4, §142.10, §142.20)

§11-20-25 Consideration of an exemption request. In the director's consideration of whether the public water system is unable to comply due to compelling factors, the director shall consider such factors as he determines to be relevant, including the following:

- (1) Construction, installation, or modification of treatment equipment or public water systems;
- (2) The time needed to put into operation a new treatment facility to replace an existing system which is not in

- compliance; and
- (3) Economic feasibility of compliance. [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; comp 12/15/94; comp 10/13/97; comp 9/7/99; comp 11/30/01] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-3, 340E-9; 42 U.S.C. §§300g-1, 300g-2, 300g-5; 40 C.F.R. Parts 141, 142, §141.4, §142.10, §142.20)

- §11-20-26 Disposition of a request for variance or exemption. (a) If the director determines that a request for a variance or exemption is inadequate or incomplete, the director may deny the request. If the director fails to act on a variance or exemption request within one hundred eighty days after the request is submitted, the request will be deemed to be granted.
- (b) If the director proposes to grant a variance or exemption request submitted pursuant to sections 11-20-21 or 11-20-24, respectively, the director shall notify the applicant of the director's decision in writing. Such notice shall identify the variance or exemption, the facility covered, and shall specify, as appropriate, the period of time for which the variance will be effective or the termination date of the exemption.
- (1) For the type of variance specified in section 11-20-20(a) or for an exemption, such notice shall also provide that the variance or exemption will be terminated when the public water system comes into compliance with the applicable regulation, and may be terminated upon a finding by the director that the public water system has failed to comply with any requirements of a final schedule issued pursuant to section 11-20-28.
- (2) For the type of variance specified in section 11-20-20(b) such notice shall provide that the variance may be terminated at any time upon a finding that the nature of the raw water source is such that the specified treatment technique for which the variance was granted is necessary to protect the health of persons or upon a finding that the public water system has failed to comply with monitoring and other requirements prescribed by the director as a condition to the granting of the variance.
- (c) For a variance specified in section 11-20-20(a)(1) or an exemption, the director shall propose a schedule for:
- (1) Compliance (including increments of progress) by the public water system with each contaminant level requirement covered by the variance or each contaminant level and treatment technique covered by the exemption; and

- (2) Implementation by the public water system of such control measures as the director may require for each contaminant covered by the variance or exemption.
- (d) The proposed schedule for compliance shall contain such conditions as the director may prescribe and shall specify dates by which steps towards compliance are to be taken, including, where applicable:
 - (1) Date by which arrangement for an alternative raw water source or improvement or existing raw water source will be completed;
 - (2) Date of initiation of the connection of the alternative raw water source or improvement of the existing raw water source; and
 - (3) Date by which final compliance is to be achieved.
- (e) The proposed schedule for compliance for a variance specified in section 11-20-20(a)(1) may, if the public water system has no access to an alternative raw water source, and can effect or anticipate no adequate improvement of the existing raw water source, specify an indefinite time period for compliance until a new and effective treatment technology is developed at which time a new compliance schedule shall be prescribed by the director.
- (f) The proposed schedule for implementation of interim control measures during the period of the variance shall specify interim treatment techniques, methods and equipment, and dates by which steps toward meeting the interim control measures are to be met.
- (g) The schedule shall be prescribed by the director within one year after the granting of the variance or exemption, subsequent to provision of opportunity for hearing pursuant to section 11-20-27.
- (h) The director may prescribe reasonable conditions as part of any variance or exemption. [Eff 12/26/81; comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-3, 340E-9; 42 U.S.C. §§300g-1, 300g-2, 300g-4, 300g-5; 40 C.F.R. Parts 141, 142, §141.4, §142.10, §142.20)

§11-20-27 Public hearings on variances, variance schedules, and exemption schedules. (a) Before a variance, variance schedule, or exemption schedule proposed by the director pursuant to section 11-20-26 may take effect, the director shall provide notice and opportunity for public hearing on the variance, variance schedule, or exemption schedule. A notice given pursuant to the preceding sentence may cover the granting of more than one variance, variance schedule, or exemption schedule and a hearing held pursuant to such notice shall include each of the variances, variance schedules, or exemption schedules covered by the notice.

Such notice shall include a summary of the proposed variance, variance schedule, or exemption schedule, and shall inform interested persons that they may submit written comments on the proposed variance, variance schedule, or exemption schedule, and may request a public hearing.

(b) Public notice of an opportunity for hearing on a variance, variance schedule, or exemption schedule shall be circulated in a manner designed to inform interested and potentially interested persons of the proposed variance, variance schedule, or exemption schedule, and shall, in addition to compliance with section 92-41, HRS include at least the following:

- (1) Posting of a notice in the principal post office of each community or area served by the public water system, and publishing of a notice in a newspaper or newspapers of general circulation in the area served by the public water system; and
- (2) Mailing of a notice to other appropriate state or local agencies at the director's discretion.

(c) Requests for hearing may be submitted by an interested person. Frivolous or insubstantial requests for hearing may be denied by the director. Requests shall be submitted to the director within thirty days after issuance of the public notices provided for in subsection (b). Such requests shall include the following information:

- (1) The name, address, and telephone number of the individual, organization, or other entity requesting a hearing;
- (2) A brief statement of the interest of the person making the request in the proposed variance, variance schedule, or exemption schedule and of information that the requesting person intends to submit at such hearing; and
- (3) The signature of the individual making the request, or, if the request is made on behalf of an organization or other entity, the signature of a responsible official of the organization or other entity.

(d) The director shall give notice in the manner set forth in subsection (b) of any hearing to be held pursuant to a request submitted by an interested person or on the person's own motion. Notice of the hearing shall also be sent to the persons requesting the hearing, if any. Notice of the hearing shall include a statement of the purpose of the hearing, information regarding the time and location for the hearing, and the address and telephone number of an office at which interested persons may obtain further information concerning the hearing. Notice of the hearing shall be given not less than fifteen days prior to the time scheduled for the hearing.

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(e) A hearing convened pursuant to subsection (d) shall not be deemed to be a "contested case" hearing within the meaning of chapter 91, Hawaii Revised Statutes. The hearing shall be conducted before a hearing officer to be designated by the director, or the director may conduct the hearing. The hearing shall be conducted by the hearing officer in an informal, orderly and expeditious manner. The hearing officer shall have authority to call witnesses, receive oral and written testimony and take such other action as may be necessary to assure the fair and efficient conduct of the hearing.

(f) The director may provide that the variance, variance schedule, or exemption schedule shall become effective thirty days after notice of opportunity for hearing is given pursuant to subsection (b) if no timely request for hearing is submitted and the director does not determine to hold a public hearing on the director's own motion. [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-3, 340E-9; 42 U.S.C. §§300g-1, 300g-2, 300g-4, 300g-5; 40 C.F.R. Parts 141, 142, §141.4, §142.10, §142.20)

§11-20-28 Final schedule. (a) Within sixty days after the termination of any public hearing held pursuant to section 11-20-27, the director shall, taking into consideration information obtained during such hearing, and other relevant information which shall include any written comments submitted pursuant to the public notice specified in section 11-20-27(a):

- (1) With respect to a variance or variance schedule, confirm, revise, or rescind the proposed variance or schedule as necessary; and
- (2) With respect to an exemption schedule, confirm or revise the proposed schedule as necessary.

(b) The exemption schedule referred to in subsection (a)(2) shall require compliance by the public water system with each contaminant level and treatment technique requirement prescribed as state regulations comparable to:

- (1) Interim national primary drinking water regulations promulgated by the administrator pursuant to 40 C.F.R. Part 141, by no later than January 1, 1984; and
- (2) Revised national primary drinking water regulations promulgated by the administrator pursuant to 40 C.F.R. Part 141, by no later than seven years after the effective date of such regulations.

(c) If the public water system has entered into an enforceable agreement to become a part of a regional public water system, as determined by the director, the schedule referred to in subsection (a)(2) shall require compliance by the public water system with each contaminant level and treatment technique

requirement prescribed by state rules comparable to:

- (1) Interim national primary drinking water regulations promulgated by the administrator pursuant to 40 C.F.R. Part 141, by no later than January 1, 1986; and
- (2) Revised national primary drinking water regulations promulgated by the administrator pursuant to 40 C.F.R. Part 141, by no later than nine years after the effective date of such regulations. [Eff 12/26/81; comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; comp 10/13/97; comp 9/7/99; am and comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-3, 340E-9; 42 U.S.C. §§300g-1, 300g-2, 300g-4, 300g-5; 40 C.F.R. Parts 141, 142, §141.4, §142.10, §142.20)

§11-20-29 Use of new sources of raw water for public water systems.

(a) No person shall use a new source of raw water to supply a public water system unless the source and its treatment facilities, if any, have been approved by the director.

(b) Any person proposing to use a new raw water source to supply a public water system shall submit plans, supporting data, and information in an engineering report to the department. The engineering report shall be prepared by a licensed professional engineer, experienced in such fields as water resources, hydrogeology, water supply, or environmental engineering, and shall include the following:

- (1) Identification of all significant factors having potential for contaminating or reducing the quality of the water source or which could cause the quality of water delivered to users of the public water system to be in violation of any state primary drinking water rule;
- (2) Data relating to quality and quantity of the source waters under normal conditions and during stress periods, drought, or heavy precipitation, as determined by field and laboratory analyses and investigations of available records; if records are not available or are inadequate to determine source quality under stress conditions, an estimate of expected quality and quantity during stress conditions should be established;
- (3) If the proposed new water source is a surface source, identification of the:
 - (A) Proximity and effects of sources of pollution and the possibility of contamination due to operation of waste treatment facilities or waste disposal systems, accidental spills of hazardous materials, agricultural operations, and any

- other activities which could introduce contaminants into the water source;
- (B) Factors affecting the time of travel of actual and potential pollution from its source to the water source;
- (C) Actual and potential siltation problems; and
- (D) Possible effects on water quality from existing or proposed upstream impoundments;
- (4) If the proposed new water source is a well, spring, or infiltration gallery, identification of the:
 - (A) Nature of soil and stratum overlaying the water source, with special emphasis on identification of fissures and faults as it relates to the natural purification or treatment of percolating fluids from existing or future activities;
 - (B) Nature, distance, direction of flow and time of travel of contaminants from present and projected domestic, industrial, and agricultural sources of pollution, and waste injection wells and other waste disposal facilities; and
 - (C) The probability and effect of surface drainage or contaminated underground water entering the subject water source;
- (5) For each present and projected potential source of contamination, identification and evaluation of alternative control measures which could be implemented to reduce or eliminate the potential for contamination of the water source, including treatment of the water source if subject to contamination, and evaluation of the physical, economic, and social effects of implementing such control measures;
- (6) Certification by the person proposing to use the new source of raw water to supply a public water system that the new source of raw water and its treatment system, if any, will be operated and maintained to provide water to the public water system that complies with state primary drinking water regulations. This requirement does not apply to new sources of raw water for the county department or board of water or water supply;
- (7) Certification by the licensed professional engineer responsible for the preparation of the report, that the facts presented in the engineering report are true, to the best of the engineer's information and belief, and that the development of the new source of raw water, and the collection, treatment, and distribution of water from the new source of raw water and its treatment system, if any, are designed to supply water that will comply with state primary

drinking water regulations. This requirement does not apply to engineering reports prepared by personnel in the county department or board of water or water supply;

- (8) Where required by the director, the identification, qualifications, education, training, and work experience of the engineer and other individuals involved in the preparation of the engineering report; and
- (9) Such other data and information as the director may require.
- (c) In deciding whether to approve or deny the proposed use of a new source of raw water to supply a public water system, the director may:
 - (1) Require the person proposing to use the new water source to provide notice and opportunity for public comment on the proposed use of the new water source. If the director determines that a public hearing is warranted, the director may require the person proposing to use the new water source to publish the notice of a public hearing. The hearing shall be subject to the provisions of public notice and hearing provided in section 11-20-27. If a public hearing is required, the person proposing to use the new water source shall pay all publication costs related to the public hearing(s) notification(s) for each water source requiring such notice;
 - (2) Consult with appropriate experts, state and county officials, including appointing a committee of such persons as the director may determine to be appropriate to advise the director in making his or her decision; or
 - (3) Take any other action which the director may determine to be appropriate to obtain adequate data and information on which to base his or her decision.
- (d) The director may grant approvals with conditions that the director considers necessary to ensure that the water delivered to the public water system complies with state primary drinking water regulations or otherwise protects public health.
- (e) Before the director approves the use of a new source of raw water to supply a new community public water system or a new non-transient non-community public water system, the proposed supplier of water shall demonstrate that the new public water system to be supplied by the new source of raw water has adequate capacity under section 11-20-29.5. Approvals for the use of a new source of raw water to supply a proposed public water system subject to section 11-20-30(d) shall be processed concurrently with the director's approval to construct the public water system and granted concurrently with the director's approval to use the

public water system.

(f) A county department or board of water or water supply may submit to the director a program plan for the development by the county of new water sources for existing public water systems. Such plan shall be sufficiently detailed to include the basic information required by this section, with special attention paid to projections of future land use and other activities as they may affect the susceptibility of the water source to contamination. When approved in writing by the director, the requirements of such program, rather than those of subsections (a), (b), (c), and (d), shall govern the development of new sources of water for existing public water systems in that county to the extent covered by that program.

(g) The director shall process written requests for approvals of new sources of raw water in a timely manner.

- (1) The director shall decide whether an engineering report is complete within ninety days of receipt. The director shall notify the person proposing to use the new source of raw water to supply a public water system or its duly authorized representative in writing if the engineering report is incomplete or otherwise deficient and describe the additional information necessary to complete the report or correct the deficiency. Failure to provide the additional information or to correct a deficiency is sufficient ground to suspend or terminate the processing of the report;
- (2) The director shall notify the person proposing to use the new source of raw water to supply a public water system or its duly authorized representative in writing when an engineering report is considered complete;
- (3) The director shall act on a written request for a new source approval within one year from the date the director notifies the person proposing to use the new source of raw water to supply a public water system or its duly authorized representative that the engineering report is complete. This time period of one year may be extended to the extent of delays of the department's inspection of the raw water source and the public water system caused by the person proposing to use the new source of raw water or the supplier of water; and
- (4) This subsection does not apply to the approval of new sources of raw water to supply a public water system subject to subsection (e).

(h) The person proposing to use the new source of raw water or its duly authorized representative shall notify the department in writing of changes which may affect the engineering

report. Failure to provide such information shall be sufficient grounds for denial or termination of the processing of the request for a new source approval. [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; comp 10/13/97; am and comp 9/7/99; am and comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-2.5, 340E-9) (Imp: HRS §§340E-2, 340E-2.5, 340E-9; 42 U.S.C. §§300g-1, 300g-2, 300g-9; 40 C.F.R. Parts 141, 142, §142.10)

§11-20-29.5 Capacity demonstration and evaluation. (a)

To demonstrate adequate capacity, the proposed or existing supplier of water shall submit to the director, written information sufficient to show that the requirements in subsections (b) through (d) are met.

(b) A public water system with adequate technical capacity has at least the following items:

- (1) A clear system description, including identification of plans and specifications, showing all water sources, infrastructure facilities, distribution systems, interconnections with other water systems, and protective measures against vandalism. Plans and specifications identified shall include those approved by the director, any as-built plans, originals, and modifications;
- (2) Adequate water source(s), including:
 - (A) Sufficient water available to serve all customers or water users based on the public water system's average daily and peak water usage, and the system's treated water output;
 - (B) Sufficient water resources for the future, based on the maximum flow or pumping capacity of each source and a five year or more projected growth rate study which shall be submitted;
 - (C) Adequate protection of water source(s) or watershed(s), based on the identification of existing and potential contamination hazards as required under the source water protection program and a description of how a protective area will be maintained around the source(s) or the watershed(s); and
 - (D) Contracts or agreements to obtain water when the water source(s) are not owned by the public water systems, and contracts or agreements for supplementary water sources for systems affected by drought. The contracts and agreements shall be identified and copies shall be provided if requested by the director;
- (3) Adequate technical performance, shown by the water systems's actual or planned compliance with national

- and state primary drinking water regulations and any permit requirements;
- (4) An adequate infrastructure replacement plan which includes estimates of the useful life and plans for the eventual replacement of the public water system's infrastructure, including:
 - (A) Wells;
 - (B) Pumping facilities;
 - (C) Storage tanks;
 - (D) Treatment facilities; and
 - (E) Distribution system (pipes, valves, meters, etc.);
 - (5) An adequate operation plan which shows that the public water system has:
 - (A) Established the appropriate operator certification level for the distribution and treatment systems and has hired or contracted, and designated appropriately certified primary and backup operators in sufficient numbers to operate the water system treatment and distribution systems at all necessary times;
 - (B) A program identifying the responsibilities, qualifications, and training requirements of the operations personnel;
 - (C) Adequate preventive and corrective maintenance program to identify, schedule, perform, and record inspections, repairs, and replacements in a timely manner;
 - (D) An adequate water quality monitoring plan for its water source(s), treatment facilities, and distribution system for both compliance with national and state primary drinking water regulations and operational informational purposes; and
 - (E) Where necessary, the proper contract, agreements, or other documents establishing the use of a contractor to represent the public water system owner(s), operate and maintain the water system, or leasing land to locate infrastructure, or to obtain right-of-way easements;
 - (6) Adequate operator training, including:
 - (A) A program to qualify new and to educate existing water treatment plant and distribution system operators under HRS chapter 340F and its rules, including classes, on the job, and periodic refresher training; and
 - (B) A safety program which includes safety training on hazards that may be encountered by water

- treatment plant and distribution system operators, and periodic refresher training;
- (7) A cross connection and backflow prevention program to ensure that there is an accurate inventory of backflow prevention devices throughout the public water system, and that devices are regularly tested and maintained; and
- (8) A system to maintain and update plans of the public water system, including:
 - (A) All plans, specifications, modifications reviewed and approved by the director as described in section 11-20-30;
 - (B) Certification by a licensed professional engineer that the public water system was constructed or modified in accordance with the plans, specifications, and supporting information which were previously reviewed and approved by the director for delivering water which will comply with the national and state primary drinking water regulations; and
 - (C) Certification by a licensed professional engineer that any deviations from the original plans are accurately recorded and noted on "as-built" plans, and approved by the director.
- (c) A public water system with adequate managerial capacity has at least the following items:
 - (1) Clear organizational structure and communications, including:
 - (A) The name, title, telephone, and fax numbers of the manager responsible for policy decisions and the public water system's compliance with national and state primary drinking water regulations;
 - (B) A chart showing the organizational structure, the working relationships between personnel, and a summary of the primary duties and responsibilities of personnel;
 - (C) List of personnel, their positions, telephone and fax numbers, and any other means of communication; and
 - (D) Where contractors are hired to manage and operate the public water system, the information described in subparagraphs (B) and (C) shall also be provided on the contractor(s);
 - (2) Clear identification of the public water system ownership, including:
 - (A) The legal name, address, telephone, and fax numbers of the public water system owner(s); and

- (B) The legal name, address, telephone, and fax numbers of the contractor(s) hired to manage and operate the public water system for the water system owner(s);
- (3) An adequate information management system, including:
 - (A) Procedures to collect, receive, and distribute necessary information quickly from and to public water system personnel, and where applicable, any contractor(s), and actual or potential users; and
 - (B) Procedures for filing, recordkeeping, tracking regulatory compliance, and implementation of programs;
- (4) Qualified management and training, including:
 - (A) The manager and other key personnel have adequate qualifications, training, education, and work experience in managing and operating public water systems; and
 - (B) An adequate program to provide continuing training for managers to maintain their knowledge and skills, and to keep informed of issues affecting public water systems;
- (5) Adequate emergency response plan which describes:
 - (A) Plausible emergencies;
 - (B) Abatement actions for each emergency described in subparagraph (A);
 - (C) Public notification procedures; and
 - (D) Identification of personnel and their specific responsibilities in each emergency situation;
- (6) Adequate internal policies, including:
 - (A) A policy to inform customers or water users adequately about water quality as necessary, the public water system's operation as it may affect them, and the customers' or water users' duties, including any need for disinfection or alternate sources, cooperation with public water system personnel during service interruptions or emergencies, compliance with rules, help with water quality monitoring, water conservation, cross connection and backflow prevention, infrastructure changes, meter reading, rates, payment, and complaints;
 - (B) Design and construction standards for public water system modifications and repairs, and expansion, and internal review and inspection procedures for such work;
 - (C) Policies and procedures for keeping regulatory agencies and customers or water users informed of items such as water quality monitoring

- results, violations, disruption of water service, emergencies, infrastructure changes, and other problems;
- (D) A policy for the development of budgets and rate structures; and
 - (E) A policy to seek information in a timely manner and use the information to adjust policies, plans, and programs appropriately.
- (d) A public water system with adequate financial capacity has at least the following items:
- (1) An adequate budget, including:
 - (A) Annual budgets that are prepared and approved by the water system owner(s) or its duly authorized representative for water system operation. A description of the budgeting process and copies of proposed and, if applicable, actual budgets, shall be provided; and
 - (B) Income and cash reserves adequate to pay annual operating expenses, unexpected significant repairs, and planned major work. Dedicated source(s) of income shall be identified;
 - (2) Adequate budget controls, including:
 - (A) Periodic performance reviews of actual expenditures and the annual budget;
 - (B) Procedures to safeguard financial assets; and
 - (C) Maintenance of detailed financial records which clearly identify the sources of income and the expenses involved in operating the public water system;
 - (3) Credit worthiness, including:
 - (A) Long term dedicated revenue projections which indicate that there will be sufficient revenue for operating and maintaining the public water system, performing anticipated repairs and replacement of major equipment, future expansion, and repayment of loans; and
 - (B) Credit report(s) which indicate that the public water system is financially healthy and credit worthy. [Eff and comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2.5, 340E-9) (Imp: HRS §§340E-2.5, 340 E-9 ; 42 U.S.C. §§300g-1, 300g-2, 300g-9)

§11-20-30 New and modified public water systems. (a) No new public water system shall be constructed or used to deliver water to any user and no existing public water system shall be substantially modified nor shall the substantial modification be used to deliver water to any user until the new public water

system or the substantial modification has been approved by the director.

- (1) The director may waive the approval required by this subsection for substantial modifications to existing county owned and operated public water systems when the appropriate county department or board of water or water supply has capability acceptable to the director to sample and analyze the water source and water to be delivered by the public water system such that the county department or board of water or water supply can satisfactorily demonstrate to the director that the public water system is capable of delivering water which will comply with the state primary drinking water regulations;
 - (2) For the purposes of this section, a "substantial modification" shall include, but not be limited to, such things as any physical modification to the source, storage, collection, treatment, or distribution facilities of the public water system which is determined by the director to have an actual or potential significant impact on the quality of water delivered to users of the public water system; and
 - (3) Any person proposing physical modification to a public water system which increases the number of service connections or population served by the public water system shall consult with the director prior to commencement of such modification for a determination by the director whether the proposed modification is a "substantial modification" subject to the requirements of this section.
- (b) A proposed or existing supplier of water or its duly authorized representative shall demonstrate that the new or modified public water system will deliver water in compliance with state primary drinking water regulations before construction. A proposed or existing supplier of water or its duly authorized representative shall provide the following information:
- (1) Plans, specifications, supporting information, and documents detailing the design and location of the proposed new public water system or the existing public water system and the proposed substantial modifications;
 - (2) Documents and supporting information on the raw water source(s) and proposed treatment, if any, demonstrating that the source(s) of raw water to supply the public water system complies with state primary drinking water regulations. Where a new source of raw water is proposed to supply a public water system, the documents must demonstrate that the

new source of raw water complies with section 11-20-29;

- (3) Documents and information demonstrating that the public water system will be adequately operated and maintained;
 - (4) Documents and information demonstrating that the new public water system or substantial modifications to an existing public water system will be located and constructed in conformance with all applicable State of Hawaii laws and county ordinances relating to floods, tsunamis, earthquakes, and fires. To the extent practicable, part or all of the new or substantially modified existing facility shall avoid any site which is subject to a significant risk from earthquakes, floods, tsunamis, fires, or other disasters which could cause a breakdown of the public water system or a portion thereof or which is, except for intake structures, within the floodplain of a hundred -year flood or is lower than any recorded high tide where appropriate records exist;
 - (5) Certification by the licensed professional engineer(s) responsible for the preparation of the plans and specifications for the new public water system or the substantial modifications to the existing public water system, and the operation and maintenance documents, that the water system or the modifications have been designed to deliver water that will comply with state primary drinking water regulations. This certification is not required for plans and specifications prepared by personnel in the county department or board of water or water supply, in compliance with applicable county department or board of water or water supply rules, regulations, and standards;
 - (6) Certification by the proposed or existing supplier of water that the public water system will be operated and maintained to provide water in compliance with state primary drinking water regulations. This certification is not required for new or modified public water systems owned and operated by the county department or board of water or water supply; and
 - (7) Other information, including testing or inspections, as the director considers necessary to decide on whether to grant approval to construct.
- (c) After construction has been completed, the new public water system or substantial modifications to an existing public water system shall not be used to deliver water to any user until approved by the director. The supplier of water or its duly authorized representative shall provide the following:

- (1) A detailed description of the changes made from the planned system or modification approved by the director and analysis of the effect, if any, that the changes will have on the quality of water delivered by the new or modified public water system and compliance with primary drinking water regulations, certified by a licensed professional engineer; and
- (2) Other information, including testing or inspections, as the director considers necessary to approve of the changes or evaluate the need for corrective actions.
- (d) For approval of a new community public water system or a new non-transient non-community public water system, required under subsection (a), before construction or use of the system, the proposed supplier of water or its duly authorized representative shall comply with the requirements of subsection (b) and demonstrate to the director's satisfaction that the proposed system has adequate capacity as described in section 11-20-29.5.
 - (1) A new community public water system or new non-transient non-community public water system shall include:
 - (A) Newly constructed community public water systems or non-transient non-community public water systems; and
 - (B) Water systems that do not currently meet the definition of a public water system as defined in section 11-20-2 but which expand their infrastructure and thereby grow to become a community public water system or a non-transient non-community public water system; and
 - (2) A demonstration of adequate capacity under section 11-20-29.5 shall include the obtaining of the director's approval of any new sources of raw water as described in section 11-20-29.
- (e) For approval of a new transient non-community public water system or substantial modification of an existing public water system, which has failed to comply with state primary drinking water regulations or has significant problems noted by sanitary surveys or inspections, required under subsection (a), the proposed or existing supplier of water may, at the director's discretion, also be required to demonstrate to the director's satisfaction that the system has adequate capacity as described in section 11-20-29.5.
- (f) Before granting approval of the construction or use of the new public water system or substantial modifications to an existing public water system, the director may:
 - (1) Conduct inspections, before, during, and after construction or implementation as deemed appropriate by the director;

- (2) Require the proposed or existing supplier of water or its duly authorized representative to perform sampling, and testing as deemed appropriate to determine the ability of the new or substantially modified public water system to deliver water that complies with state primary drinking water regulations;
- (3) Review the ability of the source(s) of raw water and treatment, if any, to supply water to the new or substantially modified public water system in compliance with state primary drinking water regulations; and
- (4) Impose conditions, such as monitoring or operating requirements or restrictions, as deemed appropriate by the director to ensure that the water delivered meets state primary drinking water regulations.
- (g) The director shall process written requests for approval of the construction or use of new public water systems or proposed substantial modifications to existing public water systems in a timely manner.
 - (1) The director shall notify the proposed or existing supplier of water or its duly authorized representative whether the written request for preconstruction approval is complete within one-hundred eighty days of receipt.
 - (2) The director shall notify the proposed or existing supplier of water or its duly authorized representative whether a written request for postconstruction and pre-use approval is complete within 60 days of receipt.
 - (3) If the director finds a written request for preconstruction or postconstruction and pre-use approval is incomplete or otherwise deficient, the director shall describe the additional information necessary to complete the written request or correct the deficiency. Failure to provide the additional information or to correct the deficiency is sufficient grounds to suspend or terminate review of the written request for preconstruction or postconstruction and pre-use approval.
 - (4) The director shall act on a written request for preconstruction approval within one year from the date the director notifies the proposed or existing supplier of water or its duly authorized representative that the written request was considered complete.
 - (5) The director shall act on a written request for postconstruction and pre-use approval within sixty days from the date the director notifies the proposed

or existing supplier of water or its duly authorized representative that the written request was considered complete.

- (6) The director may extend the deadline for postconstruction and pre-use approval to the extent of delays in inspections, sampling, testing, or providing information requested or to be conducted by the department and caused by the proposed or existing supplier of water or its duly authorized representative.

- (7) This subsection does not apply to approvals of public water systems subject to subsection (d).

(h) The proposed or existing supplier of water or its duly authorized representative shall notify the department in writing of changes which may affect the director's decision to approve the construction or use of a new public water system or a substantial modification of a public water system. Failure to provide such information shall be sufficient grounds for denial or termination of the plan review. [Eff. 12/26/81; am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; comp 10/13/97; am and comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-2.5, 340E-9) (Imp: HRS §§340E-2, 340E-2.5, 340E-9; 42 U.S.C. §§300g-1, 300g-2, 300g-9; 40 C.F.R. Parts 141, 142, §141.5, §142.10)

§11-20-31 Use of trucks to deliver drinking water.

(a) Before any person, other than a county department or board of water or water supply, may use a truck to deliver drinking water to supply a public water system, such person shall first notify the director and shall comply with procedures specified by the director to ensure that the water to be delivered will not endanger the health of users of the water. Such procedures may relate to design and construction of the tank used to carry the water, to the prior use of the tank, to cleaning and disinfecting the tank, to monitoring of the quality of water delivered by the truck, or other appropriate requirements.

(b) The director may waive, with appropriate conditions, the above requirement of notification for a person who proposes to use a truck to deliver drinking water to supply a public water system on a regular basis, if satisfactory assurances that he or she will comply with procedures acceptable to the director to ensure that the water to be delivered will not endanger the health of users. [Eff 12/26/81; comp 3/7/92; am and comp 1/2/93; comp 12/15/94; comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §141.5, §142.10)

§11-20-32 Penalties and remedies. Any person who violates any provision of this chapter, or any variance or exemption issued pursuant thereto, shall be subject to enforcement action by the director pursuant to section 340E-8, HRS. [Eff 12/26/81; comp 3/7/92; comp 1/2/93; am and comp 12/15/94; comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-7, 340E-8, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §142.10)

§11-20-33 Entry and inspection. The director shall have the right:

- (1) To enter premises on which any public water system is located;
- (2) To inspect any equipment, operation, or sampling of any public water system;
- (3) To take water samples from any public water system; and
- (4) To have access to and copy any record required to be kept pursuant to this chapter. [Eff 12/26/81; am and comp 3/7/92; comp 1/2/93; comp 12/15/94; comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2, 300g-4; 40 C.F.R. Parts 141, 142, §142.10)

§11-20-34 Special monitoring for sodium. (a) Suppliers of water for community public water systems shall collect and analyze one sample per plant at the entry point of the distribution system for the determination of sodium concentration levels; samples shall be collected and analyzed annually for public water systems utilizing solely surface water sources in whole or in part, and at least every three years for public water systems utilizing ground water sources. The minimum number of samples required to be taken by the public water system shall be based on the number of treatment plants used by the public water system, except that multiple wells drawing raw water from a single aquifer may, with the director's approval, be considered one treatment plant for determining the minimum number of samples. The supplier of water may be required by the director to collect and analyze water samples for sodium more frequently in locations where the sodium content is variable.

(b) The supplier of water shall report to the director the results of the analyses for sodium within the first ten days of the month following the month in which the sample results were received or within the first ten days following the end of the required monitoring period as stipulated by the director, whichever of these is first. If more than annual sampling is

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required, the supplier shall report the average sodium concentration within ten days of the month following the month in which the analytical results of the last sample used for the annual average was received.

(c) The supplier of water shall notify appropriate local and state public health officials of the sodium levels by written notice by direct mail within three months. A copy of each notice required to be provided by this paragraph shall be sent to the director within ten days of its issuance.

(d) Analyses for sodium shall be performed by the methods specified in 40 C.F.R. §141.23(k)(1). [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; comp 12/15/94; am and comp 10/13/97; comp 9/7/99;] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §141.41, §142.10)

§11-20-35 Special monitoring for corrosivity characteristics. (a) (Reserved)

(b) (Reserved)

(c) (Reserved)

(d) Community water supply systems shall identify whether the following construction materials are present in their distribution system and report to the department:

- (1) Lead from piping, solder, caulking, interior lining of distribution mains, alloys, and home plumbing;
- (2) Copper from piping and alloys, service lines, and home plumbing;
- (3) Galvanized piping, service lines, and home plumbing;
- (4) Ferrous piping materials such as cast iron and steel;
- (5) Asbestos cement pipe; and
- (6) In addition, the director may require identification and reporting of other materials of construction present in distribution systems that may contribute contaminants to the drinking water, such as:

(A) Vinyl lined asbestos cement pipe; and

(B) Coal tar lined pipes and tanks. [Eff 12/26/81; am and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; am and comp 10/13/97; comp 9/7/99;] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §141.42, §142.10)

§11-20-36 Reporting and public notification for certain unregulated contaminants. (a) The requirements of this section apply only to owners and operators of a public water system required to monitor for unregulated contaminants under 40 C.F.R. §141.40.

(b) Public water systems monitoring for unregulated contaminants under 40 C.F.R. §141.40 must comply with the reporting of unregulated contaminant monitoring results requirements under 40 C.F.R. §141.35. [Eff 12/26/81; comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; comp 10/13/97; comp 9/7/99; am and comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-3, 300j-4, 300g-6, 40 C.F.R. Parts 141, 142, §§141.35)

S11-20-37 REPEALED. [R NOV 30 2002]

S11-20-38 Additives. (a) No supplier of water shall directly or indirectly add any chemical, material, or product to the drinking water supplied by a public water systems unless the chemical, material, or product has been tested and certified as meeting the specifications of American National Standards Institute/National Sanitation Foundation Standard 60, Drinking Water Treatment Chemicals - Health Effects. This requirement shall be met under testing conducted by a product certification organization accredited for this purpose by the American National Standards Institute.

(b) A supplier of water may use a chemical, material, or product that has not been certified as described in subsection (a) if the director finds that the use will not pose an adverse risk to public health and:

- (1) There are no certified alternatives available; or
- (2) The chemical, material, or product is in the process of being tested and certified and there are no certified alternatives available.

(c) Prior to using an uncertified chemical, material, or product the supplier of water shall submit to the director:

- (1) A detailed explanation of the need for the chemical, material, or product;
- (2) The date the chemical, material, or product was submitted for testing;
- (3) Where applicable, the name of the accredited product certification organization conducting the testing;
- (4) A statement that certified alternatives are not available; and
- (5) Any other information deemed necessary by the director.

(d) The use of any chemical, material, or product in drinking water treatment or supply shall conform to the manufacturer's instructions or recommendations for use, maximum dosage, application rates, installation, restrictions, and any other conditions imposed by the product certification organization accredited by the American National Standards Institute or the

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director. [Eff 12/26/81; am, ren §11-20-38 and comp 3/7/92; am and comp 1/2/93; comp 12/15/94; comp 10/13/97; am and comp 9/7/99; comp NOV 30 2002] (Auth: HRS §340E-9) (Imp: HRS §340E-2)

§11-20-39 Time requirements. (a) Suppliers of community public water systems shall comply with section 11-20-34 monitoring requirements by February 27, 1982. Said suppliers shall complete the first round of sampling and reporting by August 27, 1981.

(b) Suppliers of community public water systems shall comply with section 11-20-35 monitoring requirements by February 27, 1982. Said suppliers shall comply completely with all requirements in section 11-20-35 by August 27, 1983.

(c) All other duties imposed by this chapter apply immediately. [Eff 12/26/81; am, ren §11-20-39, and comp 3/7/92; am and comp 1/2/93; am and comp 12/15/94; comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §141.6, §142.10)

§11-20-40 Criteria and procedures for public water systems using point-of-entry devices. (a) Supplier of water may use point-of-entry devices to comply with MCLs only if they meet all the requirements of this section.

(b) The supplier of water has the responsibility to operate and maintain the point-of-entry treatment system.

(c) The supplier of water shall develop and obtain the director's approval for a monitoring plan before point-of-entry devices are installed for compliance. Under the plan approved by the director, point-of-entry devices shall provide health protection equivalent to central water treatment. "Equivalent" means that the water would meet all primary drinking water regulations and would be of acceptable quality similar to water distributed by a well-operated central treatment plant. In addition to the VOCs, monitoring shall include physical measurements and observations such as total flow treated and mechanical condition of the treatment equipment.

(d) Effective technology shall be properly applied under a plan approved by the director and the microbiological safety of the water shall be maintained.

- (1) The supplier of water shall provide certification of performance, field testing, and, if not included in the certification process, a rigorous engineering design review of the point-of-entry devices to the director.
- (2) The design and application of the point-of-entry devices shall consider the tendency for increase in heterotrophic bacteria concentrations in water treated

with activated carbon. It may be necessary to use frequent backwashing, post-contactor disinfection, and Heterotrophic Plate Count monitoring to ensure that the microbiological safety of the water is not compromised.

(e) All consumers shall be protected. Every building connected to the public water system shall have a point-of-entry device installed, maintained, and adequately monitored. Every building shall be subject to treatment and monitoring, and that the rights and responsibilities of the public water system customer shall convey with title upon sale of property. [Eff 12/26/81; comp 3/7/92; am and comp 1/2/93; comp 12/15/94; comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-3, 300j-4, 300g-6, 300j-9; 40 C.F.R. Parts 141, 142, §141.100)

§11-20-41 Use of other non-centralized treatment devices.

The supplier of water shall not use bottled water or point-of-use devices to achieve compliance with an MCL. Bottled water or point-of-use devices may be used on a temporary basis to avoid an unreasonable risk to health. [Eff 12/26/81; comp 3/7/92; comp 1/2/93; comp 12/15/94; comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-3, 300j-4, 300g-6, 300j-9; 40 C.F.R. Parts 141, 142, §141.101)

§11-20-42 Bottled water and point-of-use devices.

(a) The director may require the supplier of water to use bottled water or point-of-use devices as a condition for granting an exemption from the requirements of section 11-20-4(d).

(b) The supplier of water that uses bottled water as a condition of obtaining an exemption from the requirements of section 11-20-4(d) shall meet the requirements set out in section 11-20-43(f).

(c) The supplier of water that uses point-of-use devices as a condition for receiving an exemption shall meet the requirements set out in section 11-20-43(g). [Eff 12/26/81; comp 3/7/92; comp 1/2/93; am and comp 12/15/94; comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-3, 300j-4, 300g-6, 300j-9; 40 C.F.R. Parts 141, 142, §142.56)

§11-20-43 Variances from the maximum contaminant levels for synthetic organic chemicals. (a) The following is the best technology, treatment techniques, or other means available for achieving compliance with the MCLs for synthetic organic chemicals: Removal using packed tower aeration; removal using granular activated carbon (except for vinyl chloride).

(b) Community water systems and non-transient non-community water systems shall agree to install or use any treatment method identified in subsection (a), or both, as a condition for granting a variance except as provided in subsection (c). If, after the supplier of water's installation of the treatment method, the public water system cannot meet the MCL, that supplier of water shall be eligible for a variance under the provisions of section 11-20-20.

(c) If a supplier of water can demonstrate through comprehensive engineering assessments, which may include pilot plant studies, that the treatment methods identified in subsection (a) would only achieve a de minimis reduction in contaminants, the director may issue a schedule of compliance that requires the supplier of water being granted the variance to examine other treatment methods as a condition of obtaining the variance.

(d) If the director determines that a treatment method identified in subsection (c) is technically feasible, the director may require the supplier of water to install or use that treatment method, or both, in connection with a compliance schedule issued under the provisions of section 11-20-26. The director's determination shall be based upon studies by the supplier of water and other relevant information.

(e) The director may require a supplier of water to use bottled water or point-of-use devices or other means as a condition of granting a variance or an exemption from the requirements of section 11-20-4(d), to avoid an unreasonable risk to health.

(f) The supplier of water that uses bottled water as a condition for receiving a variance or an exemption from the requirements of section 11-20-4(d) is fully responsible for the provision of a minimum quantity of bottled water to every person via door-to-door bottled water delivery and shall meet the requirements in either paragraph (1) or (2) below:

- (1) The director shall require and approve a monitoring program for bottled water. The supplier of water shall develop and put in place a monitoring program that provides reasonable assurances that the bottled water meets all MCLs. The supplier of water shall monitor a representative sample of the bottled water for all contaminants regulated under section 11-20-4(d) the first three months that it supplies the bottled water to the public, and annually thereafter. Results of the monitoring program shall be provided to

- the director; or
- (2) The supplier of water shall obtain a certification from the bottled water company that the bottled water supplied has been taken from an "approved source" as defined in 21 C.F.R. §129.3(a); the bottled water company has conducted monitoring in accordance with 21 C.F.R. §129.80(g)(1) through (3); and the bottled water does not exceed any MCLs or quality limits as set out in 21 C.F.R. §103.35, 110, and 129. The supplier of water shall provide the certification to the director the first three months after it supplies bottled water and annually thereafter.
 - (g) The supplier of water that uses point-of-use devices as a condition for obtaining a variance or an exemption from NPDWRs for volatile organic compounds shall meet the following requirements:
 - (1) The supplier of water has the responsibility to operate and maintain the point-of-use treatment system;
 - (2) The supplier of water shall develop a monitoring plan and obtain the director's approval for the plan before point-of-use devices are installed for compliance. This monitoring plan shall provide health protection equivalent to a monitoring plan for central water treatment;
 - (3) Effective technology shall be properly applied under a plan approved by the director and the microbiological safety of the water shall be maintained;
 - (4) The supplier of water shall provide certification of performance, field testing, and, if not included in the certification process, a rigorous engineering design review of the point-of-use devices to the director;
 - (5) The design and application of the point-of-use devices shall consider the tendency for an increase in heterotrophic bacteria concentrations in water treated with activated carbon. It may be necessary to use frequent backwashing, post-contactor disinfection, and Heterotrophic Plate Count monitoring to ensure that the microbiological safety of the water is not compromised; and
 - (6) All consumers shall be protected. Every building connected to the public water system shall have a point-of-use device installed, maintained, and adequately monitored. Every building is subject to treatment and monitoring, and that the rights and responsibilities of the public water system customer shall convey with title upon sale of property. [Eff 12/26/81; comp 3/7/92; am and comp 1/2/93; am and

§11-20-43

comp 12/15/94; comp 10/13/97; comp 9/7/99;
comp NOV 30 2002] (Auth: HRS §§340E-2,
340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C.
§§300g-1, 300g-3, 300j-4, 300g-6, 300j-9; 40 C.F.R.
Parts 141, 142, §142.62)

§11-20-44 REPEALED. [R 1/2/93]

§11-20-45 Total trihalomethanes sampling, analytical and other requirements. (a) Community water systems which serve a population of 10,000 or more individuals and which add a disinfectant (oxidant) to the water in any part of the drinking water treatment process shall analyze for total trihalomethanes (TTHM) in accordance with this section. For systems serving 75,000 or more individuals, sampling and analyses shall begin before November 29, 1980. For systems serving 10,000 to 74,999 individuals, sampling and analyses shall begin before November 29, 1982. For the purpose of this section, the minimum number of samples required to be taken by the system shall be based on the number of treatment plants used by the system, except that multiple wells drawing raw water from a single aquifer may, with the director's approval, be considered one treatment plant for determining the minimum number of samples. All samples taken within an established frequency shall be collected within a twenty-four-hour period.

(b) Monitoring for all community water systems utilizing surface water sources in whole or in part, and for all community water systems utilizing only ground water sources that have been determined by the director to qualify for the monitoring requirements of subsection (c), shall be conducted as follows:

- (1) Analyses for TTHMs shall be performed at quarterly intervals on at least four water samples for each treatment plant used by the system. At least twenty-five per cent of the samples shall be taken at locations within the distribution system reflecting the maximum residence time of the water in the system. The remaining seventy-five per cent shall be taken at representative locations in the distribution system, taking into account number of persons served, different sources of water and different treatment methods employed. The results of all analyses per quarter shall be arithmetically averaged and reported to the director within thirty days of the system's receipt of such results. All samples collected shall be used in the computation of the average, unless the analytical results are invalidated for technical reasons. Sampling and analyses shall be conducted in

- accordance with the methods listed in subsection (e).
- (2) Upon the written request of a community water system, the monitoring frequency required by paragraph (1) may be reduced by the director to a minimum of one sample analyzed for TTHMs per quarter taken at a point in the distribution system reflecting the maximum residence time of the water in the system, upon a written determination by the director that the data from at least one year of monitoring in accordance with paragraph (1) and local conditions demonstrate that total trihalomethane concentrations will be consistently below the MCL.
 - (3) If at any time during which the reduced monitoring frequency prescribed under this paragraph applies, the results from any analysis exceed 0.10 mg/l of TTHMs and such results are confirmed by at least one check sample taken promptly after such results are received, or if the system makes any significant change to its source of water or treatment program, the system shall immediately begin monitoring in accordance with the requirements of paragraph (1), which monitoring shall continue for at least one year before the frequency may be reduced again. At the option of the director, a system's monitoring frequency may and should be increased above the minimum in those cases where it is necessary to detect variations of TTHM levels within the distribution system.
- (c) Monitoring for a community water system utilizing only ground water sources may be conducted as follows:
- (1) Upon written request to the director, a supplier of water may seek to have the monitoring frequency required by subsection (b)(1) reduced to a minimum of one sample for maximum TTHM potential per year for each treatment plant used by the system taken at a point in the distribution system reflecting the maximum residence time of the water in the system. The system shall submit the results of at least one sample for maximum TTHM potential using the procedure specified in subsection (g). A sample must be analyzed from each treatment plant used by the system and be taken at a point in the distribution system reflecting the maximum residence time of the water in the system. The system's monitoring frequency may only be reduced upon a written determination by the director that, based upon the data submitted by the system, the system has a maximum TTHM potential of less than 0.10 mg/l and that, based upon an assessment of the local conditions of the system, the system is not likely to approach or exceed the MCL for total

TTHMs. The results of all analyses shall be reported to the director within thirty days of the system's receipt of such results. Results shall also be reported to the EPA until such monitoring requirements have been adopted by the State. All samples collected shall be used for determining whether the system must comply with the monitoring requirements of subsection (b), unless the analytical results are invalidated for technical reasons. Sampling and analyses shall be conducted in accordance with the methods listed in subsection (e).

- (2) If at any time during which the reduced monitoring frequency prescribed under paragraph (1) applies, the results from any analysis taken by the system for maximum TTHM potential are equal to or greater than 0.10 mg/l, and such results are confirmed by at least one check sample taken promptly after such results are received, the system shall immediately begin monitoring in accordance with the requirements of subsection (b) and such monitoring shall continue for at least one year before the frequency may be reduced again. In the event of any significant change to the system's raw water or treatment program, the system shall immediately analyze an additional sample for maximum TTHM potential taken at a point in the distribution system reflecting maximum residence time of the water in the system for the purpose of determining whether the system must comply with the monitoring requirements of subsection (b). At the option of the director, monitoring frequencies may and should be increased above the minimum in those cases where this is necessary to detect variation of TTHM levels within the distribution system.

(d) Compliance with section 11-20-4(c) shall be determined based on a running annual average of quarterly samples collected by the system as prescribed in subsections (b)(1) or (b)(2). If the average of samples covering any twelve month period exceeds the MCL, the supplier of water shall report to the director pursuant to section 11-20-17 and notify the public pursuant to section 11-20-18. Monitoring after public notification shall be at a frequency designated by the director and shall continue until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.

(e) Sampling and analyses made pursuant to this section shall be conducted by one of the total trihalomethanes methods as directed in 40 CFR §141.24(e) and the Technical Notes on Drinking Water Methods, EPA-600/R-94-173, October 1994, which is available from NTIS, PB-104766, or in 40 CFR §141.131(b). Samples for TTHM shall be dechlorinated upon collection to prevent further

production of trihalomethanes, according to the procedures described in the methods, except acidification is not required if only THMs or TTHMs are to be determined. Samples for maximum TTHM potential should not be dechlorinated or acidified, and should be held for seven days at 25 degrees Centigrade (or above) prior to analysis.

(f) Before a community water system makes any significant modifications to its existing treatment process for the purposes of achieving compliance with section 11-20-4(c), such system must submit and obtain the director's approval of a detailed plan setting forth its proposed modification and those safeguards that it will implement to ensure that the bacteriological quality of the drinking water served by such system will not be adversely affected by such modification. Each system shall comply with the provisions set forth in the director-approved plan. At a minimum, a director-approved plan shall require the system modifying its disinfection practice to:

- (1) Evaluate the water system for sanitary defects and evaluate the source water for biological quality;
- (2) Evaluate its existing treatment practices and consider improvements that will minimize disinfectant demand and optimize finished water quality throughout the distribution system;
- (3) Provide baseline water quality survey data of the distribution system. Such data should include the results from monitoring for coliform, fecal coliform or E. coli bacteria, fecal streptococci, standard plate counts at 35°C and 20°C, phosphate, ammonia nitrogen and total organic carbon. Virus studies should be required where source waters are heavily contaminated with sewage effluent;
- (4) Conduct additional monitoring to assure continued maintenance of optimal biological quality in finished water, for example, when chloramines are introduced as disinfectants or when pre-chlorination is being discontinued. Additional monitoring should also be required by the director for chlorate, chlorite and chlorine dioxide when chlorine dioxide is used. Standard plate count analyses should also be required by the director as appropriate before and after any modifications; and
- (5) Consider inclusion in the plan of provisions to maintain an active disinfectant residual throughout the distribution system at all times during and after the modification.

(g) The water sample for determination of maximum total trihalomethane potential is taken from a point in the distribution system that reflects maximum residence time. Procedures for sample collection and handling are given in the methods. No

reducing agent is added to "quench" the chemical reaction producing THMs at the time of sample collection. The intent is to permit the level of THM precursors to be depleted and the concentration of THMs to be maximized for the supply being tested. Four experimental parameters affecting maximum THM production are pH, temperature, reaction time and the presence of a disinfectant residual. These parameters are dealt with as follows: Measure the disinfectant residual at the selected sampling point. Proceed only if a measurable disinfectant residual is present. Collect triplicate 40 ml water samples at the pH prevailing at the time of sampling, and prepare a method blank according to the methods. Seal and store these samples together for seven days at 25 degrees Centigrade or above. After this time period, open one of the sample containers and check for disinfectant residual. Absence of a disinfectant residual invalidates the sample for further analysis. Once a disinfectant residual has been demonstrated, open another of the sealed samples and determine total THM concentration using an approved analytical method.

(h) The requirements in subsections (a) through (g) apply to surface water sources or GWUDI source community water systems, which serve a population of 10,000 or more, until December 31, 2001. The requirements in subsections (a) through (g) apply to community water systems which use only ground water not under the direct influence of surface water that add a disinfectant (oxidant) in any part of the treatment process and serve a population of 10,000 or more until December 31, 2003. After December 31, 2003, this section is no longer applicable. [Eff and comp 1/2/93; am and comp 12/15/94; am and comp 10/13/97; comp 9/7/99; am and comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §141.30)

§11-20-45.1 Disinfectant residuals, disinfection byproducts, and disinfection byproduct precursors. (a) General requirements.

- (1) The requirements of this section constitute state primary drinking water regulations.
 - (A) The regulations in this section establish criteria under which community water systems (CWSs) and nontransient, noncommunity water systems (NTNCWSs) which add a chemical disinfectant to the water in any part of the drinking water treatment process must modify their practices to meet MCLs and MRDLs in sections 11-20-4.1 and 11-20-7.5, respectively, and must meet the treatment technique requirements for disinfection byproduct precursors in subsection (f).

- (B) The regulations in this section establish criteria under which transient NCWSs that use chlorine dioxide as a disinfectant or oxidant must modify their practices to meet the MRDL for chlorine dioxide in section 11-20-7.5.
- (2) Compliance dates.
 - (A) CWSs and NTNCWSs. Unless otherwise noted, systems must comply with the requirements of this section as follows. Public water systems with a surface water source or a GWUDI source serving 10,000 or more persons must comply with this section beginning January 1, 2002. Public water systems with a surface water source or a GWUDI source serving fewer than 10,000 persons and systems using only ground water not under the direct influence of surface water must comply with this section beginning January 1, 2004.
 - (B) Transient NCWSs. Public water systems with a surface water source or a GWUDI source serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant must comply with any requirements for chlorine dioxide in this section beginning January 1, 2002. Public water systems with a surface water source or a GWUDI source serving fewer than 10,000 persons and using chlorine dioxide as a disinfectant or oxidant and systems using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with any requirements for chlorine dioxide in this section beginning January 1, 2004.
- (3) Each CWS and NTNCWS regulated under paragraph (1) must be operated by qualified personnel who meet the requirements specified by the director and are included in a state register of qualified operators.
- (4) Control of disinfectant residuals. Notwithstanding the MRDLs in section 11-20-7.5, systems may increase residual disinfectant levels in the distribution system of chlorine or chloramines (but not chlorine dioxide) to a level and for a time necessary to protect public health, i.e., to address specific microbiological contamination problems caused by circumstances such as, but not limited to, distribution line breaks, storm run-off events, source water contamination events, or cross-connection events.

- (b) Analytical requirements.
 - (1) General.
 - (A) Systems must use only the analytical method(s) specified in this subsection, or otherwise approved by EPA for monitoring under this subsection, to demonstrate compliance with the requirements of this subsection. These methods are effective for compliance monitoring beginning on February 16, 1999.
 - (B) Documents on analytical methods incorporated by reference into this subsection per 5 U.S.C. 552(a) and 1 CFR part 51 are listed in 40 C.F.R. 141.131(a)(2).
 - (2) Disinfection byproducts.
 - (A) Systems must measure disinfection byproducts by the methods listed in 40 C.F.R. 141.131(b)(1).
 - (B) Analysis under this section for disinfection byproducts must be conducted by laboratories that have received certification by EPA or the director, except as specified under subparagraph (C).
 - (C) A party approved by EPA or the director must measure daily chlorite samples at the entrance to the distribution system.
 - (3) Disinfectant residuals.
 - (A) Systems must measure residual disinfectant concentrations for free chlorine, combined chlorine(chloramines), and chlorine dioxide by the methods listed in 40 C.F.R. 141.131(c)(1).
 - (B) If approved by the director, systems may also measure residual disinfectant concentrations for chlorine, chloramines, and chlorine dioxide by using DPD colorimetric test kits.
 - (C) A party approved by EPA or the director must measure residual disinfectant concentration.
 - (4) Additional analytical methods. Systems required to analyze parameters not included in paragraphs (2) and (3) must use the following methods. A party approved by EPA or the director must measure these parameters.
 - (A) Alkalinity. All methods allowed in 40 C.F.R. 141.23(k)(1) for measuring alkalinity.
 - (B) Bromide. EPA Method 300.0 or EPA Method 300.1.
 - (C) Total Organic Carbon (TOC). Standard Method 5310 B (High-Temperature Combustion Method) or Standard Method 5310 C (Persulfate-Ultraviolet or Heated-Persulfate Oxidation Method) or Standard Method 5310 D (Wet-Oxidation Method). TOC samples may not be filtered prior to analysis. TOC samples must either be analyzed or

must be acidified to achieve pH less than 2.0 by minimal addition of phosphoric or sulfuric acid as soon as practical after sampling, not to exceed twenty-four hours. Acidified TOC samples must be analyzed within twenty-eight days.

- (D) Specific Ultraviolet Absorbance (SUVA). SUVA is equal to the UV absorption at 254nm (UV_{254}) (measured in m^{-1}) divided by the dissolved organic carbon (DOC) concentration (measured as mg/L). In order to determine SUVA, it is necessary to separately measure UV_{254} and DOC. When determining SUVA, systems must use the methods stipulated in this subparagraph to measure DOC and the method stipulated in this subparagraph to measure UV_{254} . SUVA must be determined on water prior to the addition of disinfectants/oxidants by the system. DOC and UV_{254} samples used to determine a SUVA value must be taken at the same time and at the same location.
 - (i) Dissolved Organic Carbon (DOC). Standard Method 5310 B (High-Temperature Combustion Method) or Standard Method 5310 C (Persulfate-Ultraviolet or Heated-Persulfate Oxidation Method) or Standard Method 5310 D (Wet-Oxidation Method). Prior to analysis, DOC samples must be filtered through a 0.45 μm pore-diameter filter. Water passed through the filter prior to filtration of the sample must serve as the filtered blank. This filtered blank must be analyzed using procedures identical to those used for analysis of the samples and must meet the following criteria: DOC less than 0.5 mg/L. DOC samples must be filtered through the 0.45 μm pore-diameter filter prior to acidification. DOC samples must either be analyzed or must be acidified to achieve pH less than 2.0 by minimal addition of phosphoric or sulfuric acid as soon as practical after sampling, not to exceed forty-eight hours. Acidified DOC samples must be analyzed within twenty-eight days.
 - (ii) Ultraviolet Absorption at 254 nm (UV_{254}). Method 5910 B (Ultraviolet Absorption Method). UV absorption must be measured at 253.7 nm (may be rounded off to 254 nm). Prior to analysis, UV_{254} samples must be

filtered through a 0.45 um pore-diameter filter. The pH of UV₂₅₄ samples may not be adjusted. Samples must be analyzed as soon as practical after sampling, not to exceed forty eight hours.

- (E) pH. All methods allowed in 40 C.F.R 141.23(k) (1) for measuring pH.
- (c) Monitoring requirements.
- (1) General requirements.
 - (A) Systems must take all samples during normal operating conditions.
 - (B) Systems may consider multiple wells drawing water from a single aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required, with director approval. Systems shall submit an evaluation report by a professional competent in the field of hydrogeology which proves with reasonable certainty that the affected wells are completed in, and drawing water from, the same aquifer, and that the water quality characteristics/chemistry of each well are enough alike to conclude that disinfection byproduct formation would be similar. Aquifer boundaries and designations shall be based on maps of the State Commission on Water Resource Management.
 - (C) Failure to monitor in accordance with the monitoring plan required under paragraph (6) is a monitoring violation.
 - (D) Failure to monitor will be treated as a violation for the entire period covered by the annual average where compliance is based on a running annual average of monthly or quarterly samples or averages and the system's failure to monitor makes it impossible to determine compliance with MCLs or MRDLs.
 - (E) Systems may use only data collected under the provisions of this subsection or 40 C.F.R. subpart M to qualify for reduced monitoring.
- (2) Monitoring requirements for disinfection byproducts.
 - (A) TTHMs and HAA5.
 - (i) Routine monitoring. Systems must monitor at the frequency indicated in Appendix B entitled "Routine Monitoring Frequency For TTHM and HAA5 (HAR 11-20-45.1(c) (2) (A))", dated January 1, 2002, located at the end of this chapter and made a part of this section.

- (ii) Systems may reduce monitoring, except as otherwise provided, in accordance with Appendix C entitled "Reduced Monitoring Frequency For TTHM and HAA5 (HAR 11-20-45.1(c)(2)(B))", dated January 1, 2002, located at the end of this chapter and made a part of this section.
 - (iii) Systems on a reduced monitoring schedule may remain on that reduced schedule as long as the average of all samples taken in the year (for systems which must monitor quarterly) or the result of the sample (for systems which must monitor no more frequently than annually) is no more than 0.060 mg/L and 0.045 mg/L for TTHMs and HAA5, respectively. Systems that do not meet these levels must resume monitoring at the minimum frequency identified in Appendix B (minimum monitoring frequency column) in the quarter immediately following the monitoring period in which the system exceeds 0.060 mg/L and 0.045 mg/L for TTHMs and HAA5, respectively. For systems using only ground water not under the direct influence of surface water and serving fewer than 10,000 persons, if either the TTHM annual average is >0.080 mg/L or the HAA5 annual average is >0.060 mg/L, the system must go to the increased monitoring identified in Appendix B (sample location column) in the quarter immediately following the monitoring period in which the system exceeds 0.080 mg/L or 0.060 mg/L for TTHMs or HAA5 respectively.
 - (iv) Systems on increased monitoring may return to routine monitoring if, after at least one year of monitoring their TTHM annual average is ≤ 0.060 mg/L and their HAA5 annual average is ≤ 0.045 mg/L.
 - (v) The director may return a system to routine monitoring at the director's discretion.
- (B) Chlorite. Community and nontransient noncommunity water systems using chlorine dioxide, for disinfection or oxidation, must conduct monitoring for chlorite.

- (i) Routine daily monitoring. Systems must take daily samples at the entrance to the distribution system. For any daily sample that exceeds the chlorite MCL, the system must take additional samples in the distribution system the following day at the locations required by clause (iii) in addition to the sample required at the entrance to the distribution system.
- (ii) Routine monthly monitoring. Systems must take a three-sample set each month in the distribution system. The system must take one sample at each of the following locations: near the first customer, at a location representative of average residence time, and at a location reflecting maximum residence time in the distribution system. Any additional routine sampling must be conducted in the same manner (as three-sample sets, at the specified locations). The system may use the results of additional monitoring conducted under clause (iii) to meet the requirement for monitoring under this clause.
- (iii) Additional monitoring. On each day following a routine sample monitoring result that exceeds the chlorite MCL at the entrance to the distribution system, the system is required to take three chlorite distribution system samples at the following locations: as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible (reflecting maximum residence time in the distribution system).
- (iv) Reduced monitoring at entrance to distribution system. Chlorite monitoring at the entrance to the distribution system required by clause (i) may not be reduced.
- (v) Reduced monitoring in distribution system. Chlorite monitoring in the distribution system required by clause (ii) may be reduced to one three-sample set per quarter after one year of monitoring where no individual chlorite sample taken in the distribution system under clause (ii) has

exceeded the chlorite MCL and the system has not been required to conduct monitoring under clause (iii). The system may remain on the reduced monitoring schedule until either any of the three individual chlorite samples taken quarterly in the distribution system under clause (ii) exceeds the chlorite MCL or the system is required to conduct monitoring under clause (iii), at which time the system must revert to routine monitoring.

(C) Bromate.

- (i) Routine monitoring. Community and nontransient noncommunity systems using ozone, for disinfection or oxidation, must take one sample per month for each treatment plant in the system using ozone. Systems must take samples monthly at the entrance to the distribution system while the ozonation system is operating under normal conditions.
- (ii) Reduced monitoring. Systems required to analyze for bromate may reduce monitoring from monthly to once per quarter, if the system demonstrates that the average source water bromide concentration is less than 0.05 mg/L based upon representative monthly bromide measurements for one year. The system may remain on reduced bromate monitoring until the running annual average source water bromide concentration, computed quarterly, is equal to or greater than 0.05 mg/L based upon representative monthly measurements. If the running annual average source water bromide concentration is equal to or greater than 0.05 mg/L, the system must resume routine monitoring required by clause (i).

(3) Monitoring requirements for disinfectant residuals.

(A) Chlorine and chloramines.

- (i) Routine monitoring. Community and nontransient noncommunity water systems that use chlorine or chloramines must measure the residual disinfectant level in the distribution system at the same point in the distribution system and at the same time as total coliforms are sampled, as

specified in section 11-20-9. Public water systems which filter either a surface water source or a GWUDI source may use the results of residual disinfectant concentration sampling conducted under section 11-20-46(d)(2)(B)(ii), in lieu of taking separate samples.

- (ii) Reduced monitoring. Monitoring may not be reduced.

(B) Chlorine dioxide.

- (i) Routine monitoring. Community, nontransient noncommunity, and transient noncommunity water systems that use chlorine dioxide for disinfection or oxidation must take daily samples at the entrance to the distribution system. For any daily sample that exceeds the MRDL, the system must take samples in the distribution system the following day at the locations required by clause (ii), in addition to the sample required at the entrance to the distribution system.
- (ii) Additional monitoring. On each day following a routine sample monitoring result that exceeds the MRDL, a system covered by this paragraph is required to take three chlorine dioxide distribution system samples. If chlorine dioxide or chloramines are used to maintain a disinfectant residual in the distribution system, or if chlorine is used to maintain a disinfectant residual in the distribution system and there are no disinfection addition points after the entrance to the distribution system (i.e., no booster chlorination), the system must take three samples as close to the first customer as possible, at intervals of at least six hours. If chlorine is used to maintain a disinfectant residual in the distribution system and there are one or more disinfection addition points after the entrance to the distribution system (i.e., booster chlorination), the system must take one sample at each of the following locations: as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the

- distribution system as possible (reflecting maximum residence time in the distribution system). All sampling locations shall be approved by the director.
- (iii) Reduced monitoring. Chlorine dioxide monitoring may not be reduced.
- (4) Monitoring requirements for disinfection byproduct precursors (DBPP).
- (A) Routine monitoring. Public water systems with a surface water source or a GWUDI source which use conventional filtration treatment (as defined in section 11-20-2) must monitor each treatment plant for TOC no later than the point of combined filter effluent turbidity monitoring and representative of the treated water. All systems required to monitor under this subparagraph must also monitor for TOC in the source water prior to any treatment at the same time as monitoring for TOC in the treated water. These samples (source water and treated water) are referred to as paired samples. At the same time as the source water sample is taken, all affected systems must monitor for alkalinity in the source water prior to any treatment. Systems must take one paired sample and one source water alkalinity sample per month per plant at a time representative of normal operating conditions and influent water quality.
- (B) Reduced monitoring. Public water systems with a surface water source or a GWUDI source with an average treated water TOC of less than 2.0 mg/L for two consecutive years, or less than 1.0 mg/L for one year, may reduce monitoring for both TOC and alkalinity to one paired sample and one source water alkalinity sample per plant per quarter. The system must revert to routine monitoring in the month following the quarter when the annual average treated water TOC is equal to or greater than 2.0 mg/L.
- (5) Bromide. Systems required to analyze for bromate may reduce bromate monitoring from monthly to once per quarter, if the system demonstrates that the average source water bromide concentration is less than 0.05 mg/L based upon representative monthly measurements for one year. The system must continue bromide monitoring to remain on reduced bromate monitoring.
- (6) Monitoring plans. Each system required to monitor under this subsection must develop and implement a

monitoring plan. The system must maintain the plan and make it available for inspection by the director and the general public no later than thirty days following the applicable compliance dates in subsection (a)(2). All public water systems with a surface water source or a GWUDI source serving more than 3,300 people must submit a copy of the monitoring plan to the director no later than the date of the first report required under subsection (e). The director may also require the plan to be submitted by any other system. After review, the director may require changes in any plan elements. The plan must include at least the following elements:

- (A) Specific locations and schedules for collecting samples for any parameters included in this section.
- (B) How the system will calculate compliance with MCLs, MRDLs, and treatment techniques.
- (C) If approved for monitoring as a consecutive system, or if providing water to a consecutive system, under the provisions of section 11-20-16, the sampling plan must reflect the entire distribution system.
- (d) Compliance requirements.
- (1) General requirements.
 - (A) Where compliance is based on a running annual average of monthly or quarterly samples or averages and the system fails to monitor for TTHM, HAA5, or bromate, this failure to monitor will be treated as a monitoring violation for the entire period covered by the annual average. Where compliance is based on a running annual average of monthly or quarterly samples or averages and the system's failure to monitor makes it impossible to determine compliance with MRDLs for chlorine and chloramines, this failure to monitor will be treated as a monitoring violation for the entire period covered by the annual average.
 - (B) All samples taken and analyzed under the provisions of this section must be included in determining compliance, even if that number is greater than the minimum required.
 - (C) If, during the first year of monitoring under subsection (c), any individual quarter's average will cause the running annual average of that system to exceed the MCL, the system is out of compliance at the end of that quarter.

- (2) Disinfection byproducts.
 - (A) TTHMs and HAA5.
 - (i) For systems monitoring quarterly, compliance with MCLs in section 11-20-4.1 must be based on a running annual arithmetic average, computed quarterly, of quarterly arithmetic averages of all samples collected by the system as prescribed by subsections (c)(2)(A).
 - (ii) For systems monitoring less frequently than quarterly, systems demonstrate MCL compliance if the average of samples taken that year under the provisions of subsection (c)(2)(A) does not exceed the MCLs in section 11-20.4.1. If the average of these samples exceeds the MCL, the system must increase monitoring to once per quarter per treatment plant and such a system is not in violation of the MCL until it has completed one year of quarterly monitoring, unless the result of fewer than four quarters of monitoring will cause the running annual average to exceed the MCL, in which case the system is in violation at the end of that quarter. Systems required to increase monitoring frequency to quarterly monitoring must calculate compliance by including the sample which triggered the increased monitoring plus the following three quarters of monitoring.
 - (iii) If the running annual arithmetic average of quarterly averages covering any consecutive four-quarter period exceeds the MCL, the system is in violation of the MCL and must notify the public pursuant to Section 11-20-18 or 40 C.F.R. Sec. 141.202, whichever is effective for your system, in addition to reporting to the director pursuant to subsection (e).
 - (iv) If a PWS fails to complete four consecutive quarters of monitoring (i.e., when the PWS has not been operating for four quarters), compliance with the MCL for the last four-quarter compliance period must be based on an average of the available data.
 - (B) Bromate. Compliance must be based on a running annual arithmetic average, computed quarterly,

of monthly samples (or, for months in which the system takes more than one sample, the average of all samples taken during the month) collected by the system as prescribed by subsection

(c)(2)(C). If the average of samples covering any consecutive four-quarter period exceeds the MCL, the system is in violation of the MCL and must notify the public pursuant to section 11-20-18, in addition to reporting to the director pursuant to subsection (e). If a PWS fails to complete twelve consecutive months of monitoring, compliance with the MCL for the last four-quarter compliance period must be based on an average of the available data.

- (C) Chlorite. Compliance must be based on an arithmetic average of each three sample set taken in the distribution system as prescribed by subsection (c)(2)(B)(ii) and (iii). If the arithmetic average of any three sample set exceeds the MCL, the system is in violation of the MCL and must notify the public pursuant to section 11-20-18, in addition to reporting to the director pursuant to subsection (e).

(3) Disinfectant residuals.

(A) Chlorine and chloramines.

- (i) Compliance must be based on a running annual arithmetic average, computed quarterly, of monthly averages of all samples collected by the system under subsection (c)(3)(A). If the average covering any consecutive four-quarter period exceeds the MRDL, the system is in violation of the MRDL and must notify the public pursuant to section 11-20-18, in addition to reporting to the director pursuant to subsection (e).
- (ii) In cases where systems switch between the use of chlorine and chloramines for residual disinfection during the year, compliance must be determined by including together all monitoring results of both chlorine and chloramines in calculating compliance. Reports submitted pursuant to subsection (e) must clearly indicate which residual disinfectant was analyzed for each sample.

(B) Chlorine dioxide.

- (i) Acute violations. Compliance must be based on consecutive daily samples collected by

the system under subsection (c) (3) (B). If any daily sample taken at the entrance to the distribution system exceeds the MRDL, and on the following day one (or more) of the three samples taken in the distribution system exceed the MRDL, the system is in violation of the MRDL and must take immediate corrective action to lower the level of chlorine dioxide below the MRDL and must notify the public pursuant to the procedures for acute health risks in section 11-20-18(a) (1) (C) (iv) in addition to reporting to the director pursuant to subsection (e). Failure to take samples in the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system will also be considered an MRDL violation and the system must notify the public of the violation in accordance with the provisions for acute violations in section 11-20-18(a) (1) (C) (iv) in addition to reporting to the director pursuant to subsection (e).

- (ii) Nonacute violations. Compliance must be based on consecutive daily samples collected by the system under subsection (c) (3) (B). If any two consecutive daily samples taken at the entrance to the distribution system exceed the MRDL and all distribution system samples taken are below the MRDL, the system is in violation of the MRDL and must take corrective action to lower the level of chlorine dioxide below the MRDL at the point of sampling and will notify the public pursuant to the procedures for nonacute health risks in section 11-20-18(e) in addition to reporting to the director pursuant to subsection (e). Failure to monitor at the entrance to the distribution system the day following an exceedance of the chlorine dioxide MRDL at the entrance to the distribution system is also an MRDL violation and the system must notify the public of the violation in accordance with the provisions for nonacute violations under section 11-20-

- 18(e) in addition to reporting to the director pursuant to subsection (e).
- (4) Disinfection byproduct precursors (DBPP). Compliance must be determined as specified by subsection (f)(3). Systems may begin monitoring to determine whether Step 1 TOC removals can be met twelve months prior to the compliance date for the system. This monitoring is not required and failure to monitor during this period is not a violation. However, any system that does not monitor during this period, and then determines in the first twelve months after the compliance date that it is not able to meet the Step 1 requirements in subsection (f)(2)(B) and must therefore apply for alternate minimum TOC removal (Step 2) requirements, is not eligible for retroactive approval of alternate minimum TOC removal (Step 2) requirements as allowed pursuant to subsection (f)(2)(C) and is in violation of a treatment technique under subsection (f). Systems may apply for alternate minimum TOC removal (Step 2) requirements any time after the compliance date. For systems required to meet Step 1 TOC removals, if the value calculated under subsection (f)(3)(A)(iv) is less than 1.00, the system is in violation of the treatment technique requirements and must notify the public pursuant to section 11-20-18, in addition to reporting to the director pursuant to subsection (e).
 - (e) Reporting and record keeping requirements.
 - (1) Systems required to sample quarterly or more frequently, pursuant to this subsection shall report to the director within ten days after the end of each quarter in which samples were collected, notwithstanding the provisions of section 11-20-17. Systems required to sample less frequently than quarterly must report to the director within ten days after the end of each monitoring period in which samples were collected.
 - (2) Disinfection byproducts. Systems must report the information specified in Appendix D entitled "Reporting Requirements For Disinfection Byproducts (HAR 11-20-45.1(e)(2))", dated January 1, 2002, located at the end of this chapter and made a part of this section.
 - (3) Disinfectants. Systems must report the information specified in Appendix E entitled "Reporting Requirements For Disinfection Residuals (HAR 11-20-45.1(e)(3))", dated January 1, 2002, located at the end of this chapter and made a part of this section.
 - (4) Disinfection byproduct precursors and enhanced coagulation or enhanced softening. Systems must report

the information specified in Appendix F entitled "Reporting Requirements For Disinfection Byproduct Precursors and Enhanced Coagulation or Enhanced Softening (HAR 11-20-45.1(e)(4))", dated January 1, 2002, located at the end of this chapter and made a part of this section.

- (f) Treatment technique for control of disinfection byproduct (DBP) precursors.
- (1) Applicability.
 - (A) Public water systems with a surface water source or a GWUDI source using conventional filtration treatment (as defined in section 11-20-2) must operate with enhanced coagulation or enhanced softening to achieve the TOC per cent removal levels specified in paragraph (2) unless the system meets at least one of the alternative compliance criteria listed in subparagraphs (B) or (C).
 - (B) Alternative compliance criteria for enhanced coagulation and enhanced softening systems. Public water systems with a surface water source or a GWUDI source using conventional filtration treatment may use the alternative compliance criteria in this subparagraph to comply with this subsection in lieu of complying with paragraph (2). Systems shall still comply with monitoring requirements in subsection (c)(4).
 - (i) The system's source water TOC level, measured according to subsection (b)(4)(C), is less than 2.0 mg/L, calculated quarterly as a running annual average.
 - (ii) The system's treated water TOC level, measured according to subsection (b)(4)(C), is less than 2.0 mg/L, calculated quarterly as a running annual average.
 - (iii) The system's source water TOC level, measured according to subsection (b)(4)(C), is less than 4.0 mg/L, calculated quarterly as a running annual average; the source water alkalinity, measured according to subsection (b)(4)(A), is greater than 60 mg/L (as CaCO₃), calculated quarterly as a running annual average; and either the TTHM and HAA5 running annual averages are no greater than 0.040 mg/L and 0.030 mg/L, respectively; or prior to the effective

date for compliance in subsection (a) (2), the system has made a clear and irrevocable financial commitment not later than the effective date for compliance in subsection (a) (2) to use technologies that will limit the levels of TTHMs and HAA5 to no more than 0.040 mg/L and 0.030 mg/L, respectively. Systems must submit evidence of a clear and irrevocable financial commitment, in addition to a schedule containing milestones and periodic progress reports for installation and operation of appropriate technologies, to the director for approval not later than the effective date for compliance in subsection (a) (2). These technologies must be installed and operating not later than June 30, 2005. Failure to install and operate these technologies by the date in the approved schedule will constitute a violation of National Primary Drinking Water Regulations.

- (iv) The TTHM and HAA5 running annual averages are no greater than 0.040 mg/L and 0.030 mg/L, respectively, and the system uses only chlorine for primary disinfection and maintenance of a residual in the distribution system.
 - (v) The system's source water SUVA, prior to any treatment and measured monthly according to subsection (b) (4) (D), is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average.
 - (vi) The system's finished water SUVA, measured monthly according to subsection (b) (4) (D), is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average.
- (C) Additional alternative compliance criteria for softening systems. Systems practicing enhanced softening that cannot achieve the TOC removals required by paragraph (2) (B) may use the alternative compliance criteria in this subparagraph in lieu of complying with paragraph (2). Systems must still comply with monitoring requirements in subsection (c) (4).
- (i) Softening that results in lowering the treated water alkalinity to less than 60 mg/L (as CaCO₃), measured monthly

- according to subsection (b) (4) (A) and calculated quarterly as a running annual average.
- (ii) Softening that results in removing at least 10 mg/L of magnesium hardness (as CaCO_3), measured monthly and calculated quarterly as an annual running average.
- (2) Enhanced coagulation and enhanced softening performance requirements.
- (A) Systems must achieve the per cent reduction of TOC specified in subparagraph (B) between the source water and the combined filter effluent, unless the director approves a system's request for alternate minimum TOC removal (Step 2) requirements under subparagraph (C).
- (B) Required Step 1 TOC reductions, indicated in the following table, are based upon specified source water parameters measured in accordance with subsection (b) (4). Systems practicing softening are required to meet the Step 1 TOC reductions in the far-right column (source water alkalinity greater than 120 mg/L) for the specified source water TOC:

Step 1 Required Removal of TOC By Enhanced Coagulation and
Enhanced Softening for Subpart H Systems Using Conventional
Treatment

Source-water TOC, mg/L	Source-water alkalinity, mg/L as CaCO_3		
	0-60	>60-120	>120
>2.0-4.0	35.0%	25.0%	15.0%
>4.0-8.0	45.0%	35.0%	25.0%
>8.0	50.0%	40.0%	30.0%

- (C) Public water systems with a surface water source or a GWUDI source using conventional treatment systems that cannot achieve the Step 1 TOC removals required by subparagraph (B) due to water quality parameters or operational constraints must apply to the State, within three months of failure to achieve the TOC removals required by subparagraph (B), for approval of alternative minimum TOC (Step 2) removal requirements submitted by the system. If the director approves the alternative minimum TOC removal (Step 2) requirements, the director may make those requirements retroactive for the purposes of determining compliance. Until the

director approves the alternate minimum TOC removal (Step 2) requirements, the system must meet the Step 1 TOC removals contained in subparagraph (B).

- (D) Alternate minimum TOC removal (Step 2) requirements. Applications made to the director by enhanced coagulation systems for approval of alternative minimum TOC removal (Step 2) requirements under subparagraph (C) must include, as a minimum, results of bench- or pilot-scale testing conducted under clause (i). The submitted bench- or pilot-scale testing must be used to determine the alternate enhanced coagulation level.
- (i) Alternate enhanced coagulation level is defined as coagulation at a coagulant dose and pH as determined by the method described in this subparagraph such that an incremental addition of 10 mg/L of alum (or equivalent amount of ferric salt) results in a TOC removal of less than or equal to 0.3 mg/L. The per cent removal of TOC at this point on the "TOC removal versus coagulant dose" curve is then defined as the minimum TOC removal required for the system. Once approved by the director, this minimum requirement supersedes the minimum TOC removal required by the table in subparagraph (B). This requirement will be effective until such time as the director approves a new value based on the results of a new bench- and pilot-scale test. Failure to achieve State-set alternative minimum TOC removal levels is a violation of National Primary Drinking Water Regulations.
- (ii) Bench- or pilot-scale testing of enhanced coagulation must be conducted by using representative water samples and adding 10 mg/L increments of alum (or equivalent amounts of ferric salt) until the pH is reduced to a level less than or equal to the enhanced coagulation Step 2 target pH shown in the following table:

Enhanced Coagulation Step 2 Target pH	
Alkalinity (mg/L as CaCO ₃)	Target pH
0-60	5.5
>60-120	6.3
>120-240	7.0
>240	7.5

- (iii) For waters with alkalinities of less than 60 mg/L for which addition of small amounts of alum or equivalent addition of iron coagulant drives the pH below 5.5 before significant TOC removal occurs, the system must add necessary chemicals to maintain the pH between 5.3 and 5.7 in samples until the TOC removal of 0.3 mg/L per 10 mg/L alum added (or equivalent addition of iron coagulant) is reached.
 - (iv) The system may operate at any coagulant dose or pH necessary (consistent with other NPDWRs) to achieve the minimum TOC per cent removal approved under subparagraph (C).
 - (v) If the TOC removal is consistently less than 0.3 mg/L of TOC per 10 mg/L of incremental alum dose at all dosages of alum (or equivalent addition of iron coagulant), the water is deemed to contain TOC not amenable to enhanced coagulation. The system may then apply to the director for a waiver of enhanced coagulation requirements.
- (3) Compliance calculations.
- (A) Public water systems with a surface water source or a GWUDI source other than those identified in paragraphs (1)(B) and (1)(C) must comply with requirements contained in paragraph (2)(B) or (2)(C), whichever is applicable. Systems must calculate compliance quarterly, beginning after the system has collected twelve months of data, by determining an annual average using the following method:
 - (i) Determine actual monthly TOC per cent removal, equal to:

$$(1 - (\text{treated water TOC} / \text{source water TOC})) \times 100$$
 - (ii) Determine the required monthly TOC per cent removal (from either the table in paragraph (2)(B) or from paragraph (2)(C)).

- (iii) Divide the value in clause (i) by the value in clause (ii).
 - (iv) Add together the results of clause (iii) for the last twelve months and divide by twelve.
 - (v) If the value calculated in clause (iv) is less than 1.00, the system is not in compliance with the TOC per cent removal requirements.
- (B) Systems may use the provisions in this subparagraph in lieu of the calculations in subparagraph (A) to determine compliance with TOC per cent removal requirements.
- (i) In any month that the system's treated or source water TOC level, measured according to subsection (b)(4)(C), is less than 2.0 mg/L, the system may assign a monthly value of 1.0 in lieu of the value calculated in subparagraph (A)(iii) when calculating compliance under the provisions of subparagraph (A).
 - (ii) In any month that a system practicing softening removes at least 10 mg/L of magnesium hardness (as CaCO_3), the system may assign a monthly value of 1.0 in lieu of the value calculated in subparagraph (A)(iii) when calculating compliance under the provisions of subparagraph (A).
 - (iii) In any month that the system's source water SUVA, prior to any treatment and measured according to subsection (b)(4)(D), is less than or equal to 2.0 L/mg-m, the system may assign a monthly value of 1.0 in lieu of the value calculated in subparagraph (A)(iii) when calculating compliance under the provisions of subparagraph (A).
 - (iv) In any month that the system's finished water SUVA, measured according to subsection (b)(4)(D), is less than or equal to 2.0 L/mg-m, the system may assign a monthly value of 1.0 in lieu of the value calculated in subparagraph (A)(iii) when calculating compliance under the provisions of subparagraph (A).
 - (v) In any month that a system practicing enhanced softening lowers alkalinity below 60 mg/L (as CaCO_3), the system may assign a monthly value of 1.0 in lieu of the

- value calculated in subparagraph (A) (iii) when calculating compliance under the provisions of subparagraph (A).
- (C) Public water systems with a surface water source or a GWUDI source using conventional filtration treatment may also comply with the requirements of this subsection by meeting the criteria in paragraphs (1) (B) or (1) (C).
- (4) Treatment technique requirements for DBP precursors. The Administrator identifies the following as treatment techniques to control the level of disinfection byproduct precursors in drinking water treatment and distribution systems: for public water systems with a surface water source or a GWUDI source using conventional treatment, enhanced coagulation or enhanced softening. [Eff and comp NOV 30 2004]
 (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, 300j-9, 300j-11; 40 C.F.R. §141.130, §141.131, §141.132, §141.133, §141.134, §141.135,)

§11-20-46 Filtration and disinfection (Surface Water Treatment Rule). (a) General requirements. This section, also known as the Surface Water Treatment Rule (SWTR), establishes criteria under which filtration is required as treatment for public water systems supplied by either a surface water source or by a ground water source under the direct influence of surface water (GWUDI). In addition, these rules establish treatment requirements in lieu of MCLs for the following contaminants: *Giardia lamblia*, viruses, heterotrophic plate count (HPC) bacteria, *Legionella*, and turbidity.

- (1) Each public water system with a surface water source or a GWUDI source shall provide treatment of that source water by installing and properly operating water treatment processes which reliably achieve at least:
- (A) A total of 99.9 per cent (3-log) removal and inactivation of *Giardia lamblia* cysts between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer; and
- (B) A total of 99.99 per cent (4-log) removal and inactivation of viruses between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer.

- (2) A public water system using a surface water source or a GWUDI source shall meet the requirements of this section if it meets the disinfection requirements in subsection (b) and the filtration requirements in subsection (c).
 - (3) Each public water system using a surface water source or a GWUDI source shall be operated by qualified personnel who meet the requirements specified by the director to minimize risk to human health or welfare.
 - (4) Water purveyors with a surface water or GWUDI source shall implement the requirements of the "Surface Water Treatment Rule Administrative Manual" dated January 1, 2002. Copies of the administrative manual are available upon request from the safe drinking water branch office in Honolulu, or the district health offices on Kauai, Maui, and Hawaii.
 - (5) In addition to complying with the requirements in this section, systems serving at least 10,000 people must also comply with the requirements in section 11-20-46.1.
- (b) Disinfection. A public water system that uses a surface water source or a GWUDI source shall comply, before filtration is installed, with any interim disinfection requirements the director deems necessary to protect human health and welfare. A system that uses a surface water source or a GWUDI source shall provide the disinfection treatment specified in this subsection beginning June 29, 1993, or beginning when filtration is installed, whichever is later. Each public water system that provides filtration treatment shall provide disinfection treatment as follows:
- (1) The disinfection treatment shall be sufficient to ensure that the total treatment processes of that system achieve at least a total of 99.9 per cent (3-log) inactivation and removal of *Giardia lamblia* cysts and at least a total of 99.99 per cent (4-log) inactivation and removal of viruses, as determined by the director. Each public water system shall prove that it is meeting the previous disinfection criteria by determining CTs and total inactivation ratios of 1.0 or greater and reporting these data to the director on a monthly basis;
 - (2) The residual disinfectant concentration in the water entering the distribution system, measured as specified in subsections (d)(1)(B) and (d)(2)(B)(ii), cannot be less than 0.2 mg/l for more than four hours; and
 - (3) The residual disinfectant concentration in the distribution system, measured as total chlorine, combined chlorine, or chlorine dioxide, as specified

in subsection (d)(1)(B), cannot be undetectable in more than five per cent of the samples each month, for any two consecutive months that the system serves water to the public. Water in the distribution system with a heterotrophic bacteria concentration greater than 500/ml, measured as HPC as specified in subsection (d)(1)(A), is deemed to have an undetectable disinfectant residual for purposes of determining compliance with this requirement. Thus, the value "v" in the formula given in subsection (e)(2)(B)(iv) cannot exceed five per cent in one month, for any two consecutive months.

(c) Filtration. A public water system that uses a surface water source or a GWUDI source shall provide treatment consisting of both disinfection, as specified in subsection (b), and filtration treatment which complies with the requirements of paragraphs (1) and (2) by June 29, 1993.

- (1) The turbidity level of representative samples of a system's filtered water shall at no time exceed 5 NTU, measured as specified in subsections (d)(1)(A) and (d)(2)(B)(i).
- (2) The turbidity level of representative samples of a systems filtered water shall be less than or equal to the following values in at least ninety-five per cent of the measurements taken each month as specified in subsections (d)(1)(A) and (d)(2)(B)(i).
 - (A) Conventional filtration treatment or direct filtration. 0.5 NTU, measured as specified in subsections (d)(1)(A) and (d)(2)(B)(i).
 - (i) Beginning January 1, 2002, systems serving at least 10,000 people must meet the turbidity requirements in section 11-20-46.1(c)(1).
 - (B) Slow sand filtration. 1 NTU.
 - (C) Diatomaceous earth filtration. 1 NTU.
 - (D) Other filtration technologies. A public water system may use a filtration technology not listed in subparagraphs (A) to (C) if the supplier demonstrates to the director, using pilot plant studies or other means, that the alternative filtration technology, in combination with disinfection treatment meeting the requirements of subsection (b), consistently achieves at least a total of 99.9 per cent removal and inactivation of *Giardia lamblia* cysts and at least a total of 99.99 per cent removal and inactivation of viruses. For a system that makes this demonstration, the requirements for conventional filtration apply.

Beginning January 1, 2002, systems serving at least 10,000 people must meet the requirements for other filtration technologies in section 11-20-46.1(c)(2).

- (d) Analytical and monitoring requirements.
- (1) Analytical requirements. Only the analytical method(s) specified in this paragraph, or otherwise approved by EPA, may be used to demonstrate compliance with the requirements of subsections (b) and (c). Measurements for pH, temperature, turbidity, and residual disinfectant concentrations shall be conducted by a party approved by the director. Measurements for total coliforms, fecal coliforms or E. coli, and HPC shall be conducted by a laboratory certified by the director or EPA to do such analysis. Until laboratory certification criteria are developed for the analysis of HPC and fecal coliforms or E. coli, any laboratory certified for total coliform analysis by EPA is deemed certified for HPC and fecal coliform or E. coli analysis. The following procedures shall be performed in accordance with the publications listed in the following subparagraphs.
 - (A) Public water systems must conduct analysis of pH in accordance with one of the methods listed in 40 CFR §141.23(k)(1). Public water systems must conduct analyses of total coliforms, fecal coliforms or E. coli, heterotrophic bacteria, turbidity, and temperature in accordance with the analytical methods in 40 C.F.R. §141.74(a)(1).
 - (B) Public water systems must measure residual disinfectant concentrations with one of the analytical methods in 40 C.F.R. §141.74(a)(2). If approved by the director, residual disinfectant concentrations for free chlorine and combined chlorine also may be measured by using DPD colorimetric test kits. Free and total chlorine residuals may be measured continuously by adapting a specified chlorine residual method for use with a continuous monitoring instrument provided the chemistry, accuracy, and precision remain the same. Instruments used for continuous monitoring must be calibrated with a grab sample measurement at least every five days, or with a protocol approved by the director.
- (2) Monitoring requirements.
 - (A) A public water system that uses a surface water source or a GWUDI source shall comply with any

interim reporting requirements, as specified by the director to minimize risk to human health or welfare, until filtration is in place.

- (B) A public water system that uses a surface water source or a GWUDI source and provides filtration treatment shall monitor in accordance with this paragraph beginning June 29, 1993, or when filtration is installed, whichever is later.
 - (i) Turbidity measurements as required by subsection (c) shall be performed on representative samples of the system's filtered water at least every four hours that the system serves water to the public. A supplier may substitute continuous turbidity monitoring for grab sample monitoring if the supplier validates the continuous measurement for accuracy on a regular basis using a protocol approved by the director.
 - (ii) The residual disinfectant concentration of the water entering the distribution system shall be monitored continuously, and the lowest value shall be recorded each day, except that if there is a failure in the continuous monitoring equipment, grab sampling every four hours may be conducted in lieu of continuous monitoring, but for no more than five working days following the failure of the equipment. If at any time the residual disinfectant concentration falls below 0.2 mg/l in a system using grab sampling in lieu of continuous monitoring, the supplier shall take a grab sample every four hours until the residual disinfectant concentration is equal to or greater than 0.2 mg/l.
 - (iii) Heterotrophic bacteria, measured as HPC as specified in paragraph (1)(C), shall be measured at least at the same points in the distribution system and at the same time as total coliforms are sampled, as specified in section 11-20-6, except that the director may allow a public water system which uses both a surface water source or a GWUDI source, and a ground water source to take HPC samples at points other than the total coliform sampling points if the director determines that such points are more representative of

treated (disinfected) water quality within the distribution system. Residual disinfectant concentration should also be measured for operational control.

- (e) Reporting and recordkeeping requirements.
- (1) A public water system that uses a surface water source or a GWUDI source shall comply with any interim reporting requirements, as specified by the director to minimize risk to human health and welfare, until filtration is in place.
- (2) When a public water system that uses a surface water source or a GWUDI source and provides filtration treatment, the supplier shall report monthly to the director the information specified in this paragraph (2) beginning June 29, 1993, or when filtration is installed, whichever is later.
 - (A) Turbidity measurements as required by subsection (d)(2)(B)(i) shall be reported within ten days after the end of each month the system serves water to the public. Information that shall be reported includes:
 - (i) The total number of filtered water turbidity measurements taken during the month.
 - (ii) The number and percentage of filtered water turbidity measurements taken during the month which are less than or equal to the turbidity limits specified in subsection (c) for the filtration technology being used.
 - (iii) The date and value of any turbidity measurements taken during the month which exceed 5 NTU.
 - (B) Disinfection information specified in subsection (d)(2) shall be reported to the director within ten days after the end of each month the system serves water to the public. Information that shall be reported includes:
 - (i) For each day, the lowest measurement of residual disinfectant concentration in mg/l in water entering the distribution system.
 - (ii) The date and duration of each period when the residual disinfectant concentration in water entering the distribution system fell below 0.2 mg/l and when the director was notified of the occurrence.
 - (iii) The following information on the samples taken in the distribution system in conjunction with total coliform monitoring

pursuant to subsection (b): the number of routine total coliform samples collected and the number of instances in which HPC is more than 500 per milliliter.

- (iv) For the current and previous month the system serves water to the public, the value of "V" in the following formula:

$$V = \frac{b \times 100}{a}$$

where

a = the number of routine total coliform samples collected,

b = the number of instances in which HPC is more than 500 per milliliter.

- (C) (i) Each supplier, upon discovering that a waterborne disease outbreak potentially attributable to that water system has occurred, shall report that occurrence to the director as soon as possible, but no later than 4:00 p.m. of that day. If the supplier becomes aware of such a waterborne diseases outbreak after 4:00 p.m., the supplier shall notify the director by 10:00 a.m. of the next business day.
- (ii) If at any time the turbidity exceeds 5 NTU, the supplier shall inform the director by 4:00 p.m. that same day or no later than 10:00 a.m. of the next business day.
- (iii) If at any time the disinfectant residual falls below 0.2 mg/l in the water entering the distribution system, the supplier shall notify the director by 4:00 p.m. that same day or no later than 10:00 a.m. of the next business day. The supplier also shall notify the director by 4:00 p.m. that same day or no later than 10:00 a.m. of the next business day whether or not the residual was restored to at least 0.2 mg/l within four hours. [Eff and comp 1/2/93; am and comp 12/15/94; am and comp 10/13/97; comp 9/7/99; am and comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300f, 300g-1, 300g-2,

300g-3, 300g-4, 300g-5, 300g-6, 300j-4,
and 300j-9; 40 C.F.R. §§141.70, §141.72,
§141.73, §141.74, and §141.75)

§11-20-46.1 Enhanced filtration and disinfection.

(a) General requirements. The requirements of this section constitute national primary drinking water regulations. This section establishes requirements for filtration and disinfection that are in addition to criteria under which filtration and disinfection are required under section 11-20-46(a). The requirements of this section are applicable to public water systems with a surface water source or a GWUDI source serving at least 10,000 people, beginning January 1, 2002 unless otherwise specified in this section. The regulations in this section establish or extend treatment technique requirements in lieu of maximum contaminant levels for the following contaminants: *Giardia lamblia*, viruses, heterotrophic plate count bacteria, *Legionella*, *Cryptosporidium*, and turbidity.

- (1) Each public water system with a surface water source or a GWUDI source serving at least 10,000 people shall provide treatment of that source water that complies with these treatment technique requirements and are in addition to those identified in section 11-20-46. The treatment technique requirements consist of installing and properly operating water treatment processes which reliably achieve:
 - (A) At least 99 per cent (2-log) removal of *Cryptosporidium* between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer.
 - (B) Compliance with the profiling and benchmark requirements under the provisions of subsection (b).
 - (2) A public water system subject to the requirements of this section is considered to be in compliance with the requirements of this subsection if:
 - (A) it meets the applicable filtration requirements in either section 11-20-46(c) or subsection (c) and the disinfection requirements in section 11-20-46(b) and subsection (b).
 - (3) Systems are not permitted to begin construction of uncovered finished water storage facilities beginning February 16, 1999.
- (b) Disinfection profiling and benchmarking.
- (1) Determination of systems required to profile. A public water system subject to the requirements of this paragraph must determine its TTHM annual average

using the procedure in subparagraph (A) and its HAA5 annual average using the procedure in subparagraph (B). The annual average is the arithmetic average of the quarterly averages of four consecutive quarters of monitoring.

- (A) The TTHM annual average must be the annual average during the same period as is used for the HAA5 annual average.
 - (i) Those systems that collected data under the provisions of 40 C.F.R. 141 subpart M (Information Collection Rule) must use the results of the samples collected during the last four quarters of required monitoring under Sec. 141.142 of that subpart.
 - (ii) Those systems that use "grandfathered" HAA5 occurrence data that meet the provisions of subparagraph (B)(ii) must use TTHM data collected at the same time under the provisions of sections 11-20-4 and 11-20-45.
 - (iii) Those systems that use HAA5 occurrence data that meet the provisions of subparagraph (B)(iii) must use TTHM data collected at the same time under the provisions of sections 11-20-4 and 11-20-45.
- (B) The HAA5 annual average must be the annual average during the same period as is used for the TTHM annual average.
 - (i) Those systems that collected data under the provisions of 40 C.F.R. subpart M (Information Collection Rule) must use the results of the samples collected during the last four quarters of required monitoring under 40 C.F.R. Sec. 141.142.
 - (ii) Those systems that have collected four quarters of HAA5 occurrence data that meets the routine monitoring sample number and location requirements for TTHM in sections 11-20-4 and 11-20-45 and handling and analytical method requirements of 40 C.F.R. Sec. 141.142(b)(1) may use those data to determine whether the requirements of this section apply.
 - (iii) Those systems that have not met the provisions of either clause (i) or (ii) by March 16, 1999 must either: conduct monitoring for HAA5 that meets the routine

monitoring sample number and location requirements for TTHM in sections 11-20-4 and 11-20-45 and the handling and analytical method requirements of 40 C.F.R. Sec. 141.142(b)(1) to determine the HAA5 annual average and whether the requirements of paragraph (2) apply (this monitoring must be completed so that the applicability determination can be made no later than March 31, 2000), or comply with all other provisions of this subsection as if the HAA5 monitoring had been conducted and the results required compliance with paragraph (2).

- (C) The system may request that the director approve a more representative annual data set than the data set determined under subparagraph (A) or (B) for the purpose of determining applicability of the requirements of this subsection.
- (D) The director may require that a system use a more representative annual data set than the data set determined under subparagraph (A) or (B) for the purpose of determining applicability of the requirements of this subsection.
- (E) The system must submit data to the director on the schedule in clauses (i) through (v).
 - (i) Those systems that collected TTHM and HAA5 data under the provisions of 40 C.F.R. subpart M (Information Collection Rule), as required by subparagraphs (A)(i) and (B)(i), must submit the results of the samples collected during the last twelve months of required monitoring under 40 C.F.R. Sec. 141.142 not later than December 31, 1999.
 - (ii) Those systems that have collected four consecutive quarters of HAA5 occurrence data that meets the routine monitoring sample number and location for TTHM in sections 11-20-4 and 11-20-45 and handling and analytical method requirements of 40 C.F.R. Sec. 141.142(b)(1), as allowed by subparagraphs (A)(ii) and (B)(ii), must submit those data to the director not later than April 16, 1999. Until the director has approved the data, the system must conduct monitoring for HAA5 using the monitoring requirements specified under subparagraph (B)(iii).

- (iii) Those systems that conduct monitoring for HAA5 using the monitoring requirements specified by subparagraphs (A) (iii) and (B) (iii), must submit TTHM and HAA5 data not later than March 31, 2000.
- (iv) Those systems that elect to comply with all other provisions of this subsection as if the HAA5 monitoring had been conducted and the results required compliance with this subsection, as allowed under subparagraph (B) (iii), must notify the director in writing of their election not later than December 31, 1999.
- (v) If the system elects to request that the director approve a more representative annual data set than the data set determined under subparagraph (B) (i), the system must submit this request in writing not later than December 31, 1999.
- (vi) New systems shall be given 15 months from the startup date approved by the director to submit TTHM and HAA5 profiling data as required under this subsection.
- (F) Any system having either a TTHM annual average ≥ 0.064 mg/L or an HAA5 annual average ≥ 0.048 mg/L during the period identified in subparagraphs (A) and (B) must comply with paragraph (2).
- (2) Disinfection profiling.
 - (A) Any system that meets the criteria in paragraph (1) (F) must develop a disinfection profile of its disinfection practice for a period of up to three years.
 - (B) The system must monitor daily for a period of twelve consecutive calendar months to determine the total logs of inactivation for each day of operation, based on the CT99.9 values in Tables E-1 thru E-6, E-8, E-10, and E-12 of the Hawaii Surface Water Treatment Rule Administrative Manual, as appropriate, through the entire treatment plant. This system must begin this monitoring not later than April 1, 2000. New or substantially modified systems, as defined under sections 11-20-29 and 11-20-30 respectively, applying after April 1, 2000 shall begin monitoring not later than a date determined by the director. As a minimum, the system with a single point of disinfectant application prior to entrance to the distribution system must conduct the monitoring specified in this

subparagraph. A system with more than one point of disinfectant application must conduct the monitoring in this subparagraph for each disinfection segment. The system must monitor the parameters necessary to determine the total inactivation ratio, using analytical methods in section 11-20-46(d)(1), as follows:

- (i) The temperature of the disinfected water must be measured once per day at each residual disinfectant concentration sampling point during peak hourly flow.
 - (ii) If the system uses chlorine, the pH of the disinfected water must be measured once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.
 - (iii) The disinfectant contact time(s) ("T") must be determined for each day during peak hourly flow.
 - (iv) The residual disinfectant concentration(s) ("C") of the water before or at the first customer and prior to each additional point of disinfection must be measured each day during peak hourly flow.
- (C) In lieu of the monitoring conducted under the provisions of subparagraph (B) to develop the disinfection profile, the system may elect to meet the requirements of clause (C)(i). In addition to the monitoring conducted under the provisions of subparagraph (B) to develop the disinfection profile, the system may elect to meet the requirements of clause (C)(ii).
- (i) A PWS that has three years of existing operational data may submit those data, a profile generated using those data, and a request that the director approve use of those data in lieu of monitoring under the provisions of subparagraph (B) not later than March 31, 2000. The director must determine whether these operational data are substantially equivalent to data collected under the provisions of subparagraph (B). These data must also be representative of *Giardia lamblia* inactivation through the entire treatment plant and not just of certain treatment segments. Until the director approves this request, the system is required to conduct monitoring under the provisions of

- subparagraph (B).
- (ii) In addition to the disinfection profile generated under subparagraph (B), a PWS that has existing operational data may use those data to develop a disinfection profile for additional years. Such systems may use these additional yearly disinfection profiles to develop a benchmark under the provisions of paragraph (3). The director must determine whether these operational data are substantially equivalent to data collected under the provisions of subparagraph (B). These data must also be representative of inactivation through the entire treatment plant and not just of certain treatment segments.
- (D) The system must calculate the total inactivation ratio as follows:
- (i) If the system uses only one point of disinfectant application, the system may determine the total inactivation ratio for the disinfection segment based on either: determining one inactivation ratio ($CT_{calc}/CT_{99.9}$) before or at the first customer during peak hourly flow, or determining successive $CT_{calc}/CT_{99.9}$ values, representing sequential inactivation ratios, between the point of disinfectant application and a point before or at the first customer during peak hourly flow. Under this alternative, the system must calculate the total inactivation ratio by determining ($CT_{calc}/CT_{99.9}$) for each sequence and then adding the ($CT_{calc}/CT_{99.9}$) values together to determine $\sum (CT_{calc}/CT_{99.9})$.
 - (ii) If the system uses more than one point of disinfectant application before the first customer, the system must determine the CT value of each disinfection segment immediately prior to the next point of disinfectant application, or for the final segment, before or at the first customer, during peak hourly flow. The ($CT_{calc}/CT_{99.9}$) value of each segment and $\sum (CT_{calc}/CT_{99.9})$ must be calculated using the method in clause (i).

- (iii) The system must determine the total logs of inactivation by multiplying the value calculated in clause (i) or (ii) by 3.0.
 - (E) A system that uses either chloramines or ozone for primary disinfection must also calculate the logs of inactivation for viruses using a method approved by the State.
 - (F) The system must retain disinfection profile data in graphic form, as a spreadsheet, or in some other format acceptable to the director for review as part of sanitary surveys conducted by the State.
- (3) Disinfection benchmarking.
- (A) Any system required to develop a disinfection profile under the provisions of paragraphs (1) and (2) and that decides to make a significant change to its disinfection practice must consult with the director prior to making such change. Significant changes to disinfection practice are:
 - (i) Changes to the point of disinfection;
 - (ii) Changes to the disinfectant(s) used in the treatment plant;
 - (iii) Changes to the disinfection process; and
 - (iv) Any other modification identified by the State.
 - (B) Any system that is modifying its disinfection practice must calculate its disinfection benchmark using the procedure specified in this subparagraph.
 - (i) For each year of profiling data collected and calculated under paragraph (2), the system must determine the lowest average monthly Giardia lamblia inactivation in each year of profiling data. The system must determine the average Giardia lamblia inactivation for each calendar month for each year of profiling data by dividing the sum of daily Giardia lamblia of inactivation by the number of values calculated for that month.
 - (ii) The disinfection benchmark is the lowest monthly average value (for systems with one year of profiling data) or average of lowest monthly average values (for systems with more than one year of profiling data) of the monthly logs of Giardia lamblia inactivation in each year of profiling data.

- (C) A system that uses either chloramines or ozone for primary disinfection must also calculate the disinfection benchmark for viruses using a method approved by the State.
 - (D) As part of its consultation process with the director, the system must submit the following information:
 - (i) A description of the proposed change, including why the change is being proposed, a summary of alternatives considered with positive and negative impacts, and a final analysis of the selected alternative;
 - (ii) The disinfection profile for *Giardia lamblia* (and, if necessary, viruses) under paragraph (2) and benchmark as required by paragraph (3) (B); and
 - (iii) An analysis of how the proposed change will affect the current levels of disinfection.
- (c) Filtration. A public water system is subject to the requirements of this subsection consisting of both disinfection, as specified in section 11-20-46(b), and filtration treatment which complies with the requirements of this subsection or section 11-20-46(c) (1), and either section 11-20-46(c) (2) (B) or (2) (C) by December 31, 2001.
- (1) Conventional filtration treatment or direct filtration.
 - (A) For systems using conventional filtration or direct filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to 0.3 NTU in at least 95 per cent of the measurements taken each month, measured as specified in section 11-20-46(d) (1) and (2).
 - (B) The turbidity level of representative samples of a system's filtered water must at no time exceed 1 NTU, measured as specified in section 11-20-46(d) (1) and (2).
 - (C) A system that uses lime softening may acidify representative samples prior to analysis using a protocol approved by the State.
 - (2) Filtration technologies other than conventional filtration treatment, direct filtration, slow sand filtration, or diatomaceous earth filtration.
 - (A) A public water system may use a filtration technology not listed in either paragraph (1) or in section 11-20-46(c) (2) (B) or (C) if it demonstrates to the State, using pilot plant

studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of section 11-20-46(b), consistently achieves 99.9 per cent removal and/or inactivation of *Giardia lamblia* cysts and 99.99 per cent removal and/or inactivation of viruses, and 99 per cent removal of *Cryptosporidium* oocysts, and the director approves the use of the filtration technology. For a system that makes this demonstration, the requirements for conventional filtration apply.

(d) Filtration sampling requirements.

(1) Monitoring requirements for systems using filtration treatment. In addition to monitoring required by section 11-20-46(d), a public water system subject to the requirements of this section that provides filtration treatment, other than slow sand filtration or diatomaceous earth filtration, must conduct continuous monitoring of turbidity for each individual filter using an approved method in section 11-20-46(d)(1) and must calibrate turbidimeters using the procedure specified by the manufacturer. Systems must record the results of individual filter monitoring every fifteen minutes.

(2) If there is a failure in the continuous turbidity monitoring equipment, the system must conduct grab sampling every four hours in lieu of continuous monitoring, but for no more than five working days following the failure of the equipment.

(e) Reporting and recordkeeping requirements. In addition to the reporting and recordkeeping requirements in section 11-20-46(e), a public water system subject to the requirements of this section that provides conventional filtration treatment or direct filtration must report monthly to the director the information specified in paragraphs (1) and (2) beginning January 1, 2002. In addition to the reporting and recordkeeping requirements in section 11-20-46(e), a public water system subject to the requirements of this section that provides filtration approved under subsection (c)(2) must report monthly to the director the information specified in paragraph (1) beginning January 1, 2002. The reporting in paragraph (1) is in lieu of the reporting specified in section 11-20-46(e)(2)(A).

(1) Turbidity measurements as required by subsection (c) must be reported within ten days after the end of each month the system serves water to the public.

Information that must be reported includes:

(A) The total number of filtered water turbidity measurements taken during the month.

- (B) The number and percentage of filtered water turbidity measurements taken during the month which are less than or equal to the turbidity limits specified in subsection (c) (1) or (2).
 - (C) The date and value of any turbidity measurements taken during the month which exceed 1 NTU for systems using conventional filtration treatment or direct filtration, or which exceed the maximum level set by the director under subsection (c) (2).
- (2) Systems must maintain the results of individual filter monitoring taken under subsection (d) for at least three years. Systems must report that they have conducted individual filter turbidity monitoring under subsection (d) within ten days after the end of each month the system serves water to the public. Systems must report individual filter turbidity measurement results taken under subsection (d) within ten days after the end of each month the system serves water to the public only if measurements demonstrate one or more of the conditions in subparagraphs (A) through (D). Systems that use lime softening may apply to the director for alternative exceedance levels for the levels specified in subparagraphs (A) through (D) if they can demonstrate that higher turbidity levels in individual filters are due to lime carryover only and not due to degraded filter performance.
- (A) For any individual filter that has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements taken fifteen minutes apart, the system must report the filter number, the turbidity measurement, and the date(s) on which the exceedance occurred. In addition, the system must either produce a filter profile for the filter within seven days of the exceedance (if the system is not able to identify an obvious reason for the abnormal filter performance) and report that the profile has been produced or report the obvious reason for the exceedance.
 - (B) For any individual filter that has a measured turbidity level of greater than 0.5 NTU in two consecutive measurements taken fifteen minutes apart at the end of the first four hours of continuous filter operation after the filter has been backwashed or otherwise taken offline, the system must report the filter number, the turbidity, and the date(s) on which the exceedance occurred. In addition, the system

- must either produce a filter profile for the filter within seven days of the exceedance (if the system is not able to identify an obvious reason for the abnormal filter performance) and report that the profile has been produced or report the obvious reason for the exceedance.
- (C) For any individual filter that has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements taken fifteen minutes apart at any time in each of three consecutive months, the system must report the filter number, the turbidity measurement, and the date(s) on which the exceedance occurred. In addition, the system must conduct a self-assessment of the filter within fourteen days of the exceedance and report that the self-assessment was conducted. The self-assessment must consist of at least the following components: assessment of filter performance; development of a filter profile; identification and prioritization of factors limiting filter performance; assessment of the applicability of corrections; and preparation of a filter self-assessment report.
- (D) For any individual filter that has a measured turbidity level of greater than 2.0 NTU in two consecutive measurements taken fifteen minutes apart at any time in each of two consecutive months, the system must report the filter number, the turbidity measurement, and the date(s) on which the exceedance occurred. In addition, the system must arrange for the conduct of a comprehensive performance evaluation (CPE) by a third party approved by the director no later than thirty days following the exceedance and have the evaluation completed and submitted to the director no later than ninety days following the exceedance. The director may require systems that have undergone a CPE to subsequently perform a comprehensive technical assistance (CTA) evaluation if the CPE findings determine that a CTA, and the implementation of its recommendations by the system, have the potential to improve water quality in the plant effluent or in the distribution system.
- (3) Additional reporting requirements.
- (A) If at any time the turbidity exceeds 1 NTU in representative samples of filtered water in a

- system using conventional filtration treatment or direct filtration, the system must inform the director by 4:00 p.m. that same day or no later than 10:00 a.m. of the next business day.
- (B) If at any time the turbidity in representative samples of filtered water exceeds the maximum level set by the director under subsection (c) (2) for filtration technologies other than conventional filtration treatment, direct filtration, slow sand filtration or diatomaceous earth filtration, the system must inform the director by 4:00 p.m. that same day or no later than 10:00 a.m. of the next business day.
 - (f) Composite correction program. The director may require systems regulated under subsection (a) to perform a composite correction program (CCP) and implement any follow up recommendations that result from the program.
 - (1) The director may require that a system perform a CCP if one of the following occurs:
 - (A) A waterborne disease outbreak; or
 - (B) System deficiencies are identified which:
 - (i) Degrade water quality in the plant effluent or distribution system; or
 - (ii) In the director's opinion, have the potential to result in an unreasonable risk to the health of persons served by the system.
 - (2) Third parties performing CCPs on behalf of the system must be approved by the director.
 - (g) Sanitary surveys. The director shall conduct sanitary surveys for all systems, regulated under subsection (a), no less frequently than every three years for community PWSs and every five years for noncommunity PWSs.
 - (1) Sanitary surveys shall address, as a minimum, the following eight components:
 - (A) Source;
 - (B) Treatment;
 - (C) Distribution system;
 - (D) Finished water storage;
 - (E) Pumps, pump facilities, and controls;
 - (F) Monitoring and reporting and data verification;
 - (G) System management and operation; and
 - (H) Operator compliance with state requirements
 - (2) Significant deficiencies are defined as any defect in a system's design, operation and maintenance, as well as any failure or malfunction of any system component, that the director determines to cause, or have the potential to cause, an immediate sanitary risk to

health.

- (A) The director has determined that the following conditions meet the definition in this paragraph:
- (i) Source water infrastructure (wellhead or surface water intake) that is susceptible to harmful land use activities, pollution sources or water quality conditions that indicate an immediate sanitary risk to an untreated ground water source or to the designed treatment capabilities of an existing water treatment plant, and are within the control of the PWS.
 - (ii) An unauthorized bypass around a water treatment plant which treats surface water or ground water under the direct influence of a surface water (GWUDI).
 - (iii) Drainage, sewer, chemical, or raw water line cross connections that may allow contaminants to enter the drinking water system.
 - (iv) Potential backpressure and backsiphonage conditions, including those observed outside the PWS system (i.e. private property), which could impact the PWS' water system quality. As a minimum, a PWS must contact private property owners to resolve potential cross connection hazard to their distribution system.
 - (v) Tank contents are exposed to contamination due to corrosion, poorly designed or maintained roof-wall interface, roof vents, overflow or washout line piping, hatches, manways or any other unprotected openings.
 - (vi) Well contamination potential at pump discharge head including: vent or air line tubing openings into well column are not sealed properly; drain for packing lubrication water is plugged and lubrication water is either stagnant or harbors small animals.
- (B) PWSs shall respond to the director in writing to significant deficiencies outlined in sanitary survey reports no later than forty-five calendar days after receipt of the report, indicating how and on what schedule the system will address significant deficiencies noted in the survey.

- (C) PWSs subject to subparagraph (B) shall take the necessary steps to correct significant deficiencies identified in sanitary survey reports if such deficiencies are within the control of the PWS and its governing body.
- (D) Failure of a PWS to respond to the requirements of either subparagraph (B) or (C) shall constitute a violation of these rules and subject the system to administrative penalties under 340E-8, HRS.
- (3) Community PWSs meeting the criteria in the subparagraphs (A) through (E) may be eligible for sanitary surveys to be performed on their systems at a reduced frequency of no less than every five years. Community PWSs achieving this reduced frequency status must continue to meet the criteria in subparagraphs (A) through (E) for the period between surveys, or risk an immediate adjustment of their reduced frequency status by the director.
 - (A) No significant deficiencies identified in the system's most recent survey performed in compliance with this subsection;
 - (B) No waterborne disease outbreaks attributable to the system during the past five years;
 - (C) No violations of HAR 11-20 during the past five years;
 - (D) Evidence of an active cross connection control program; and
 - (E) Evidence of an up-to-date operator training and certification program.
- (4) The director will review the system's disinfection profiling data, as defined in subsection (b) (2), whenever a sanitary survey is performed.
 [Eff and comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, 300j-9, 300j-11; 40 C.F.R. §141.170, §141.172, §141.173, §141.174, §141.175)

§11-20-47 Treatment techniques for acrylamide and epichlorohydrin. Each public water system must certify annually in writing to the director (using third party or manufacturer's certification) that when acrylamide and epichlorohydrin are used in drinking water systems, the combination (or product) of dose and monomer level does not exceed the levels specified as follows:

Acrylamide = 0.05 per cent dosed at 1 ppm (or equivalent);

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Epichlorohydrin = 0.01 per cent dosed at 20 ppm (or equivalent).

Certifications can rely on manufacturers or third parties, as approved by the director. [Eff and comp 1/2/93; am and comp 12/15/94; comp 10/13/97; comp 9/7/99; comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141 and 142, §§141.111)

§11-20-48 Adoption of the national primary drinking water regulations for lead and copper. The national primary drinking water regulations for lead and copper, adopted under the Safe Drinking Water Act, and appearing at 40 C.F.R. Part 141, July 1, 2000, Subpart I, §§141.80, 141.81, 141.82, 141.83, 141.84, 141.85, 141.86, 141.87, 141.88, 141.89, 141.90, and 141.91 are made a part of this chapter. For this chapter, "State" as used in these federal regulations means "state" or "director" as used in this chapter. [Eff and comp 12/15/94; am and comp 10/13/97; am and comp 9/7/99; am and comp NOV 30 2002] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141 and 142, §§141.80, 141.81, 141.82, 141.83, 141.84, 141.85, 141.86, 141.87, 141.88, 141.89, 141.90, and 141.91)

§11-20-48.5 Consumer confidence reports. (a) Community water systems shall comply with 40 C.F.R. §§141.151(a)-(d), (f), 141.152(b)-(d), 141.153, 141.154, 141.155(a)-(f), (h), 63 Federal Register 69516, Wednesday, December 16, 1998 and 63 Federal Register 69475, Wednesday December 16, 1998 which are made a part of this chapter. For this chapter, "State" as used in these federal regulations means "state" or "director" as used in this chapter.


(b) In accordance with 40 C.F.R. §141.155(g), the governor may waive the mailing requirement of 40 C.F.R. §141.155(a), and if the governor does so, the requirements of 40 C.F.R. §141.155(g)(1) or (2) apply as appropriate. [Eff and comp 9/7/99; am and comp NOV 30 2002] (Auth: HRS §§340E-6, 340E-9) (Imp: HRS §§340E-6, 340E-9; 42 U.S.C. §§300g-3(c)(4); 40 C.F.R. Part 141, §§141.151, 141.152, 141.153, 141.154, and 141.155)


§11-20-49 Severability clause. If any provision of this chapter, or the application thereof to any person or circumstance, is held invalid, the invalidity does not affect other provisions of applications of this chapter which can be given effect without the invalid provision or application, and to this end the provisions of this chapter are severable. [Eff 12/26/81; ren §11-20-36 and comp 3/7/92; ren §11-20-48 and comp 1/2/93; ren and comp §11-20-49 and comp 12/15/94; comp 10/13/97; comp 9/7/99; comp] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9; 42 U.S.C. §§300g-1, 300g-2; 40 C.F.R. Parts 141, 142, §142.10)

NOV 30 2004

Amendments to and compilation of chapter 20 title 11, Hawaii Administrative Rules, on the Summary Page dated November 13, 2002 were adopted on November 15, 2002 following a public hearing held on October 31, 2002, after public notice was given statewide in the Honolulu Star Bulletin, The Garden Isle, Maui News, Hawaii Tribune-Herald and West Hawaii Today on September 30, 2002.

The rules shall take effect ten days after filing with the Office of the Lieutenant Governor.


BRUCE S. ANDERSON, Ph.D., M.P.H.
Director of Health

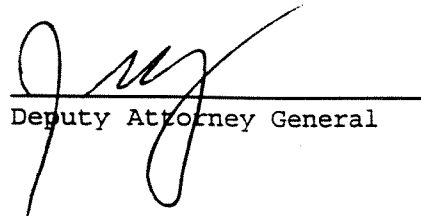

BENJAMIN J. CAYETANO
Governor
State of Hawaii

Dated: 11-19-02

NOV 20 2002

Filed

APPROVED AS TO FORM:


Deputy Attorney General

02 NOV 20 19:43
LIEUTENANT GOVERNOR
OFFICE

Appendix A
Mandatory Language to Include in Public Notices
January 1, 2002

- (1) Trichloroethylene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that trichloroethylene is a health concern at certain levels of exposure. This chemical is a common metal cleaning and dry cleaning fluid. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set forth the enforceable drinking water standard for trichloroethylene at 0.005 milligrams per liter (mg/l) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.
- (2) Carbon tetrachloride. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that carbon tetrachloride is a health concern at certain levels of exposure. This chemical was once a popular household cleaning fluid. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for carbon tetrachloride at 0.005 milligrams per liter (mg/l) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.
- (3) 1,2-Dichloroethane. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 1,2-dichloroethane is a health concern at certain levels of exposure. This chemical is used as a cleaning fluid for fats, oils, waxes, and resins. It generally gets into drinking water from improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for 1,2-dichloroethane at 0.005 milligrams per liter (mg/l) to reduce the risk of cancer or other adverse health effects which have been observed in

laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

- (4) Vinyl chloride. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that vinyl chloride is a health concern at certain levels of exposure. This chemical is used in industry and is found in drinking water as a result of the breakdown of related solvents. The solvents are used as cleaners and degreasers of metals and generally get into drinking water by improper waste disposal. This chemical has been associated with significantly increased risks of cancer among certain industrial workers who were exposed to relatively large amounts of this chemical during their working careers. This chemical has also been shown to cause cancer in laboratory animals when the animals are exposed at high levels over their lifetimes. Chemicals that cause increased risk of cancer among exposed industrial workers and in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for vinyl chloride at 0.002 milligrams per liter (mg/l) to reduce the risk of cancer or other adverse health effects which have been observed in humans and laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.
- (5) Benzene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that benzene is a health concern at certain levels of exposure. This chemical is used as a solvent and degreaser of metals. It is also a major component of gasoline. Drinking water contamination generally results from leaking underground gasoline and petroleum tanks or improper waste disposal. This chemical has been associated with significantly increased risks of leukemia among certain industrial workers who were exposed to relatively large amounts of this chemical during their working careers. This chemical has also been shown to cause cancer in laboratory animals when the animals are exposed at high levels over their lifetimes. Chemicals that cause increased risk of cancer among exposed industrial workers and in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for benzene at 0.005 milligrams per liter (mg/l) to reduce the risk of cancer or other adverse health effects which have been observed in humans and laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

- (6) 1,1-Dichloroethylene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 1,1-dichloroethylene is a health concern at certain levels of exposure. This chemical is used in industry and is found in drinking water as a result of the breakdown of related solvents. The solvents are used as cleaners and degreasers of metals and generally get into drinking water by improper waste disposal. This chemical has been shown to cause liver and kidney damage in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals which cause adverse effects in laboratory animals also may cause adverse health effects in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for 1,1-dichloroethylene at 0.007 milligrams per liter (mg/l) to reduce the risk of these adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.
- (7) Para-dichlorobenzene. The United States Environmental Agency (EPA) sets drinking water standards and has determined that para-dichlorobenzene is a health concern at certain levels of exposure. This chemical is a component of deodorizers, moth balls, and pesticides. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause liver and kidney damage in laboratory animals such as rats and mice when the animals are exposed to high levels over their lifetimes. Chemicals which cause adverse effects in laboratory animals also may cause adverse health effects in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for para-dichlorobenzene at 0.075 milligrams per liter (mg/l) to reduce the risk of these adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.
- (8) 1,1,1-Trichloroethane. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that the 1,1,1-trichloroethane is a health concern at certain levels of exposure. This chemical is used as a cleaner and degreaser of metals. It is generally gets into drinking water by improper waste disposal. This chemical has been shown to damage the liver, nervous system, and circulatory system of laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during their working careers also suffered damage to the liver, nervous system, and circulatory system. Chemicals which cause adverse effects among exposed industrial workers and in laboratory animals also may cause adverse health effects in humans who are exposed at lower levels over long periods of

time. EPA has set the enforceable drinking water standard for 1,1,1-trichloroethane at 0.2 milligrams per liter (mg/l) to protect against the risk of these adverse health effects which have been observed in humans and laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

- (9) Fluoride. The United States Environmental Protection Agency requires that we send you this notice on the level of fluoride in drinking water. The drinking water in your community has a fluoride concentration of {1} milligrams per liter (mg/l). Federal regulations require that fluoride, which occurs naturally in your water supply, do not exceed a concentration of 4.0 mg/l in drinking water. This is an enforceable standard called a Maximum Contaminant Level (MCL), and it has been established to protect the public health. Exposure to drinking water levels above 4.0 mg/l for many years may result in some cases of crippling skeletal fluorosis, which is a serious bone disorder. Federal law also requires that we notify you when monitoring indicates that the fluoride in your drinking water exceeds 2.0 mg/l. This is intended to alert families about dental problems that might affect children under nine years of age. The fluoride concentration of your water exceeds this federal guideline. Fluoride in children's drinking water at levels of approximately 1 mg/l reduces the number of dental cavities. However, some children exposed to levels of fluoride greater than about 2.0 mg/l may develop dental fluorosis. Dental fluorosis, in its moderate and severe forms, is a brown staining and/or pitting of the permanent teeth. Because dental fluorosis occurs only when developing teeth (before they erupt from the gums) are exposed to elevated fluoride levels, households without children are not expected to be affected by this level of fluoride. Families with children under the age of nine are encouraged to seek other sources of drinking water for their children to avoid the possibility of staining and pitting. Your water supplier can lower the concentration of fluoride in your water so that you will still receive the benefits of cavity prevention while the possibility of stained and pitted teeth is minimized. Removal of fluoride may increase your water costs. Treatment systems are also commercially available for home use. Information on such systems is available at the address given below. Low fluoride bottled drinking water that would meet all standards is also commercially available. For further information, contact {2} at your water system.

{1} Public Water System (PWS) shall insert the compliance result which triggered notification under this part.

{2} Public Water System shall insert name, address and telephone number of a contact person at the PWS.

- (10) Microbiological contaminants. (For use when there is a violation of the treatment technique requirements for

filtration and disinfection in §11-20-46 or §11-20-46.1). The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that the presence of microbiological contaminants are a health concern at certain levels of exposure. If water is inadequately treated, microbiological contaminants in that water may cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and any associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water, but also may be caused by a number of factors other than your drinking water. EPA has set enforceable requirements for treating drinking water to reduce the risk of these adverse health effects. Treatment such as filtering and disinfecting the water removes or destroys microbiological contaminants. Drinking water which is treated to meet EPA requirements is associated with little to none of this risk and should be considered safe.

- (11) Total coliforms (to be used when there is a violation of §11-20-6(a), and not a violation of §11-20-6(b)): The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that the presence of total coliforms is a possible health concern. Total coliforms are common in the environment and are generally not harmful themselves. The presence of these bacteria in drinking water, however, generally is a result of a problem with water treatment or the pipes which distribute the water, and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and any associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water, but also may be caused by a number of factors other than your drinking water. EPA has set an enforceable drinking water standard for total coliforms to reduce the risk of these adverse health effects. Under this standard, no more than 5.0 per cent of the samples collected during a month can contain these bacteria, except that systems collecting fewer than 40 samples per month that have one total coliform-positive sample per month are not violating the standard. Drinking water which meets this standard is usually not associated with a health risk from disease-causing bacteria and should be considered safe.
- (12) Fecal Coliforms/E. coli (to be used when there is a violation of §11-20-6(b) or both §11-20-6(a) and (b)): The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that the presence of fecal coliforms or E. coli is a serious health concern. Fecal coliforms and E. coli are generally not harmful themselves, but their presence in drinking water is serious because they usually are associated with sewage or animal wastes. The presence of these bacteria in drinking water is generally a result of a problem with water

treatment or the pipes which distribute the water, and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water, but also may be caused by a number of factors other than your drinking water. EPA has set an enforceable drinking water standard for fecal coliforms and E. coli to reduce the risk of these adverse health effects. Under this standard all drinking water samples shall be free of these bacteria. Drinking water which meets this standard is associated with little or none of this risk and should be considered safe. The director recommends that consumers boil water that is contaminated with fecal bacteria.

- (13) Lead. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that lead is a health concern at certain exposure levels. Materials that contain lead have frequently been used in the construction of water supply distribution systems, and plumbing systems in private homes and other buildings. The most commonly found materials include service lines, pipes, brass and bronze fixtures, and solders and fluxes. Lead in these materials can contaminate drinking water as a result of the corrosion that takes place when water comes into contact with those materials. Lead can cause a variety of adverse health effects in humans. At relatively low levels of exposure, these effects may include interference with red blood cell chemistry, delays in normal physical and mental development in babies and young children, slight deficits in the attention span, hearing, and learning abilities of children, and slight increases in the blood pressure of some adults. EPA's national primary drinking water regulation requires all public water systems to optimize corrosion control to minimize lead contamination resulting from the corrosion of plumbing materials. Public water systems serving 50,000 people or fewer that have lead concentrations below 15 parts per billion (ppb) in more than 90% of tap water samples (the EPA "action level") have optimized their corrosion control treatment. Any water system that exceeds the action level must also monitor their source water to determine whether treatment to remove lead in source water is needed. Any water system that continues to exceed the action level after installation of corrosion control and/or source water treatment must eventually replace all lead service lines contributing in excess of 15 (ppb) of lead to drinking water. Any water system that exceeds the action level must also undertake a public education program to inform consumers of ways they can reduce their exposure to potentially high levels of lead in drinking water.

- (14) Copper. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that copper is a health concern at certain exposure levels. Copper, a reddish-brown metal, is often used to plumb residential and commercial structures that are connected to water distribution systems. Copper contaminating drinking water as a corrosion byproduct occurs as the result of the corrosion of copper pipes that remain in contact with water for a prolonged period of time. Copper is an essential nutrient, but at high doses it has been shown to cause stomach and intestinal distress, liver and kidney damage, and anemia. Persons with Wilson's disease may be at higher risk of health effects due to copper than the general public. EPA's national primary drinking water regulation requires all public water systems to install optimal corrosion control to minimize copper contamination resulting from the corrosion of plumbing materials. Public water systems serving 50,000 people or fewer that have copper concentrations below 1.3 parts per million (ppm) in more than 90% of tap water samples (the EPA "action level") are not required to install or improve their treatment. Any water system that exceeds the action level must also monitor their source water to determine whether treatment to remove copper in source water is needed.
- (15) Asbestos. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that asbestos fibers greater than 10 micrometers in length are a health concern at certain levels of exposure. Asbestos is a naturally occurring mineral. Most asbestos fibers in drinking water are less than 10 micrometers in length and occur in drinking water from natural sources and from corroded asbestos-cement pipes in the distribution system. The major uses of asbestos were in the production of cements, floor tiles, paper products, paint, and caulking; in transportation-related applications; and in the production of textiles and plastics. Asbestos was once a popular insulating and fire retardant material. Inhalation studies have shown that various forms of asbestos have produced lung tumors in laboratory animals. The available information on the risk of developing gastrointestinal tract cancer associated with the ingestion of asbestos from drinking water is limited. Ingestion of intermediate-range chrysotile asbestos fibers greater than 10 micrometers in length is associated with causing benign tumors in male rats. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for asbestos at 7 million long fibers per liter to reduce the potential risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to asbestos.

- (16) Barium. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that barium is a health concern at certain levels of exposure. This inorganic chemical occurs naturally in some aquifers that serve as sources of ground water. It is also used in oil and gas drilling muds, automotive paints, bricks, tiles and jet fuels. It generally gets into drinking water after dissolving from naturally occurring minerals in the ground. This chemical may damage the heart and cardiovascular system, and is associated with high blood pressure in laboratory animals such as rats exposed to high levels during their lifetimes. In humans, EPA believes that effects from barium on blood pressure should not occur below 2 parts per million (ppm) in drinking water. EPA has set the drinking water standard for barium at 2 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to barium.
- (17) Cadmium. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that cadmium is a health concern at certain levels of exposure. Food and the smoking of tobacco are common sources of general exposure. This inorganic metal is a contaminant in the metals used to galvanize pipe. It generally gets into water by corrosion of galvanized pipes or by improper waste disposal. This chemical has been shown to damage the kidney in animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the kidney. EPA has set the drinking water standard for cadmium at 0.005 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA is associated with little to none of this risk and is considered safe with respect to cadmium.
- (18) Chromium. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that chromium is a health concern at certain levels of exposure. This inorganic metal occurs naturally in the ground and is often used in the electroplating of metals. It generally gets into water from runoff from old mining operations and improper waste disposal from plating operations. This chemical has been shown to damage the kidney, nervous system, and the circulatory system of laboratory animals such as rats and mice when the animals are exposed at high levels. Some humans who were exposed to high levels of this chemical suffered liver and kidney damage, dermatitis and respiratory problems. EPA has set the drinking water standard for chromium at 0.1 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with

respect to chromium.

- (19) Mercury. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that mercury is a health concern at certain levels of exposure. This inorganic metal is used in electrical equipment and some water pumps. It usually gets into water as a result of improper waste disposal. This chemical has been shown to damage the kidney of laboratory animals such as rats when the animals are exposed at high levels over their lifetimes. EPA has set the drinking water standard for mercury at 0.002 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to mercury.
- (20) Nitrate. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that nitrate poses an acute health concern at certain levels of exposure. Nitrate is used in fertilizer and is found in sewage and wastes from human and/or farm animals and generally gets into drinking water from those activities. Excessive levels of nitrate in drinking water have caused serious illness and sometimes death in infants under six months of age. The serious illness in infants is caused because nitrate is converted to nitrite in the body. Nitrite interferes with the oxygen carrying capacity of the child's blood. This is an acute disease in that symptoms can develop rapidly in infants. In most cases, health deteriorates over a period of days. Symptoms include shortness of breath and blueness of the skin. Clearly, expert medical advice should be sought immediately if these symptoms occur. The purpose of this notice is to encourage parents and other responsible parties to provide infants with an alternate source of drinking water. Local and state health authorities are the best source for information concerning alternate sources of drinking water for infants. EPA has set the drinking water standard at 10 parts per million (ppm) for nitrate to protect against the risk of these adverse effects. EPA has also set a drinking water standard for nitrite at 1 ppm. To allow for the fact that the toxicity of nitrate and nitrite are additive, EPA has also established a standard for the sum of nitrate and nitrite at 10 ppm. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to nitrate.
- (21) Nitrite. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that nitrite poses an acute health concern at certain levels of exposure. This inorganic chemical is used in fertilizers and is found in sewage and wastes from humans and/or farm animals and generally gets into drinking water as a result of those activities. While excessive levels of nitrite in drinking water have not been observed, other sources of nitrite have caused serious illness and sometimes death in

infants under six months of age. The serious illness in infants is caused because nitrite interferes with the oxygen carrying capacity of the child's blood. This is an acute disease in that symptoms can develop rapidly. However, in most cases, health deteriorates over a period of days. Symptoms include shortness of breath and blueness of the skin. Clearly, expert medical advice should be sought immediately if these symptoms occur. The purpose of this notice is to encourage parents and other responsible parties to provide infants with an alternate source of drinking water. Local and state health authorities are the best source for information concerning alternate sources of drinking water for infants. EPA has set the drinking water standard at 1 part per million (ppm) for nitrite to protect against the risk of these adverse effects. EPA has also set a drinking water standard for nitrate (converted to nitrite in humans) at 10 ppm and for the sum of nitrate and nitrite at 10 ppm. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to nitrite.

- (22) Selenium. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that selenium is a health concern at certain high levels of exposure. Selenium is also an essential nutrient at low levels of exposure. This inorganic chemical is found naturally in food and soils and is used in electronics, photocopy operations, the manufacture of glass, chemicals, drugs, and as a fungicide and a feed additive. In humans, exposure to high levels of selenium over a long period of time has resulted in a number of adverse health effects, including a loss of feeling and control in the arms and legs. EPA has set the drinking water standard for selenium at 0.05 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to selenium.
- (23) Acrylamide. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that acrylamide is a health concern at certain levels of exposure. Polymers made from acrylamide are sometimes used to treat water supplies to remove particulate contaminants. Acrylamide has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. Sufficiently large doses of acrylamide are known to cause neurological injury. EPA has set the drinking water standard for acrylamide using a treatment technique to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. This treatment technique limits the amount of acrylamide in the polymer and the amount of the polymer which may be added to drinking water to remove particulates.

Drinking water systems which comply with this treatment technique have little to no risk and are considered safe with respect to acrylamide.

- (24) Alachlor. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that alachlor is a health concern at certain levels of exposure. This organic chemical is a widely used pesticide. When soil and climatic conditions are favorable, alachlor may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for alachlor at 0.002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to alachlor.
- (25) Aldicarb. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that aldicarb is a health concern at certain levels of exposure. Aldicarb is a widely used pesticide. Under certain soil and climatic conditions (e.g., sandy soil and high rainfall), aldicarb may leach into ground water after normal agricultural applications to crops such as potatoes or peanuts or may enter drinking water supplies as a result of surface runoff. This chemical has been shown to damage the nervous system in laboratory animals such as rats and dogs exposed to high levels. EPA has set the drinking water standard for aldicarb at 0.003 parts per million (ppm) to protect against the risk of adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to aldicarb.
- (26) Aldicarb sulfoxide. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that aldicarb sulfoxide is a health concern at certain levels of exposure. Aldicarb is a widely used pesticide. Aldicarb sulfoxide in ground water is primarily a breakdown product of aldicarb. Under certain soil and climatic conditions (e.g., sandy soil and high rainfall, aldicarb sulfoxide may leach into ground water after normal agricultural applications to crops such as potatoes or peanuts or may enter drinking water supplies as a result of surface runoff. This chemical has been shown to damage the nervous system in laboratory animals such as rats and dogs exposed to high levels. EPA has set the drinking water standard for aldicarb sulfoxide at 0.004 parts per million (ppm) to protect against the risk of adverse health effects. Drinking water that meets the EPA standard is associated

with little to none of this risk and is considered safe with respect to aldicarb sulfoxide.

- (27) Aldicarb sulfone. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that aldicarb sulfone is a health concern at certain levels of exposure. Aldicarb is a widely used pesticide. Aldicarb sulfone is formed from the breakdown of aldicarb and is considered for registration as a pesticide under the name aldoxycarb. Under certain soil and climatic conditions (e.g., sandy soil and high rainfall), aldicarb sulfone may leach into ground water after normal agricultural applications to crops such as potatoes or peanuts or may enter drinking water supplies as a result of surface runoff. This chemical has been shown to damage the nervous system in laboratory animals, such as rats and dogs exposed to high levels. EPA has set the drinking water standard for aldicarb sulfone at 0.002 parts per million (ppm) to protect against the risk of adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to aldicarb sulfone.
- (28) Atrazine. The United States Environmental Agency (EPA) sets drinking water standards and has determined that atrazine is a health concern at certain levels of exposure. This organic chemical is a herbicide. When soil and climatic conditions are favorable, atrazine may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to affect offspring of rats and the heart of dogs. EPA has set the drinking water standard for atrazine at 0.003 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to atrazine.
- (29) Carbofuran. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that carbofuran is a health concern at certain levels of exposure. This organic chemical is a pesticide. When soil and climatic conditions are favorable, carbofuran may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to damage the nervous and reproductive systems of laboratory animals such as rats and mice exposed at high levels over their lifetimes. Some humans who were exposed to relatively large amounts of this chemical during their working careers also suffered damage to the nervous system. Effects on the nervous system are generally rapidly reversible. EPA has set the drinking water standard for carbofuran at 0.04 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to carbofuran.

- (30) Chlordane. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that chlordane is a health concern at certain levels of exposure. This organic chemical is a pesticide used to control termites. Chlordane is not very mobile in soils. It usually gets into drinking water after application near water supply intakes or wells. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for chlordane at 0.002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to chlordane.
- (31) Dibromochloropropane (DBCP). The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that DBCP is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, dibromochloropropane may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for DBCP at 0.0002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to DBCP. The director, however, has deemed that further protection is warranted and has set the MCL at .00004 ppm.
- (32) o-Dichlorobenzene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that o-dichlorobenzene is a health concern at certain levels of exposure. This organic chemical is used as a solvent in the production of pesticides and dyes. It generally gets into water by improper waste disposal. This chemical has been shown to damage the liver, kidney and the blood cells of laboratory animals such as rats and mice exposed to high levels during their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the liver, nervous system, and circulatory system. EPA has set the drinking water standard for o-dichlorobenzene at 0.6 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated

with little to none of this risk and is considered safe with respect to o-dichlorobenzene.

- (33) cis-1,2-Dichloroethylene. The United States Environmental Protection Agency (EPA) establishes drinking water standards and has determined that cis-1,2-dichloroethylene is a health concern at certain levels of exposure. This organic chemical is used as a solvent and intermediate in chemical production. It generally gets into water by improper waste disposal. This chemical has been shown to damage the liver, nervous system, and circulatory system of laboratory animals such as rats and mice when exposed at high levels over their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. EPA has set the drinking water standard for cis-1,2-dichloroethylene at 0.07 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to cis-1,2-dichloroethylene.
- (34) trans-1,2-Dichloroethylene. The United States Environmental Protection Agency (EPA) establishes drinking water standards and has determined that trans-1,2-dichloroethylene is a health concern at certain levels of exposure. This organic chemical is used as a solvent and intermediate in chemical production. It generally gets into water by improper waste disposal. This chemical has been shown to damage the liver, nervous system, and the circulatory system of laboratory animals such as rats and mice when exposed at high levels over their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. EPA has set drinking water standard for trans-1,2-dichloroethylene at 0.1 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to trans-1,2-dichloroethylene.
- (35) 1,2-Dichloropropane. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 1,2-dichloropropane is a health concern at certain levels of exposure. This organic chemical is used as a solvent and pesticide. When soil and climatic conditions are favorable, 1,2-dichloropropane may get into drinking water by runoff into surface water or by leaching into ground water. It may also get into drinking water through improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for 1,2-dichloropropane at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in

laboratory animals. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to 1,2-dichloropropane.

- (36) 2,4-D. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 2,4-D is a health concern at certain levels of exposure. This organic chemical is used as a herbicide and to control algae in reservoirs. When soil and climatic conditions are favorable, 2,4-D may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to damage the liver and kidney of laboratory animals such as rats exposed at high levels during their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. EPA has set the drinking water standard for 2,4-D at 0.07 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to 2,4-D.
- (37) Epichlorohydrin. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that epichlorohydrin is a health concern at certain levels of exposure. Polymers made from epichlorohydrin are sometimes used in the treatment of water supplies as a flocculent to remove particulates. Epichlorohydrin generally gets into drinking water by improper use of these polymers. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for epichlorohydrin using a treatment technique to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. This treatment technique limits the amount of epichlorohydrin in the polymer and the amount of the polymer which may be added to drinking water as a flocculent to remove particulates. Drinking water systems which comply with this treatment technique have little to no risk and are considered safe with respect to epichlorohydrin.
- (38) Ethylbenzene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined ethylbenzene is a health concern at certain levels of exposure. This organic chemical is a major component of gasoline. It generally gets into water by improper waste disposal or leaking gasoline tanks. This chemical has been shown to damage the kidney, liver, and nervous system of laboratory animals such as rats exposed to high levels during their lifetimes. EPA has set the drinking water standard for ethylbenzene at 0.7 parts per

million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to ethylbenzene.

- (39) Ethylene dibromide (EDB). The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that EDB is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, EDB may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for EDB at 0.00005 part per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to EDB. The director, however, has deemed that further protection is warranted and has set the MCL at .00004 ppm.
- (40) Heptachlor. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that heptachlor is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, heptachlor may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standards for heptachlor at 0.0004 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to heptachlor.
- (41) Heptachlor epoxide. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that heptachlor epoxide is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, heptachlor epoxide may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase

the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standards for heptachlor epoxide at 0.0002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to heptachlor epoxide.

- (42) Lindane. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that lindane is a health concern at certain levels of exposure. This organic chemical is used as a pesticide. When soil and climatic conditions are favorable, lindane may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to damage the liver, kidney, nervous system, and immune system of laboratory animals such as rats, mice and dogs exposed at high levels during their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system and circulatory system. EPA has established the drinking water standard for lindane at 0.0002 part per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to lindane.
- (43) Methoxychlor. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that methoxychlor is a health concern at certain levels of exposure. This organic chemical is used as a pesticide. When soil and climatic conditions are favorable, methoxychlor may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to damage the liver, kidney, nervous system, and reproductive system of laboratory animals such as rats exposed at high levels during their lifetimes. It has also been shown to produce growth retardation in rats. EPA has set the drinking water standard for methoxychlor at 0.04 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little none of this risk and is considered safe with respect to methoxychlor.
- (44) Monochlorobenzene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that monochlorobenzene is a health concern at certain levels of exposure. This organic chemical is used as a solvent. It generally gets into water by improper waste disposal. This chemical has been shown to damage the liver, kidney and nervous system of laboratory animals such as rats and mice exposed to high levels during their lifetimes. EPA has set the drinking water standard for monochlorobenzene at 0.1 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking

water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to monochlorobenzene.

- (45) Polychlorinated biphenyls (PCBs). The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that polychlorinated biphenyls (PCBs) are a health concern at certain levels of exposure. These organic chemicals were once widely used in electrical transformers and other industrial equipment. They generally get into drinking water by improper waste disposal or leaking electrical industrial equipment. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for PCBs at 0.0005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to PCBs.
- (46) Pentachlorophenol. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that pentachlorophenol is a health concern at certain levels of exposure. This organic chemical is used as a wood preservative, herbicide, disinfectant, and defoliant. It generally gets into drinking water by runoff into surface water or leaching into ground water. This chemical has been shown to produce adverse reproductive effects and to damage the liver and kidneys of laboratory animals such as rats exposed to high levels during their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the liver and kidneys. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed to high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for pentachlorophenol at 0.001 parts per million (ppm) to protect against the risk of cancer or other adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to pentachlorophenol.
- (47) Styrene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that styrene is a health concern at certain levels of exposure. This organic chemical is commonly used to make plastics and is sometimes a component of resins used for drinking water treatment. Styrene may get into drinking water from improper waste disposal. This chemical has been shown to damage the liver and nervous system in laboratory animals

when exposed at high levels during their lifetimes. EPA has set the drinking water standard for styrene at 0.1 part per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to styrene.

- (48) Tetrachloroethylene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that tetrachloroethylene is a health concern at certain levels of exposure. This organic chemical has been a popular solvent, particularly for dry cleaning. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for tetrachloroethylene at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to tetrachloroethylene.
- (49) Toluene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that toluene is a health concern at certain levels of exposure. This organic chemical is used as a solvent and in the manufacture of gasoline for airplanes. It generally gets into water by improper waste disposal or leaking underground storage tanks. This chemical has been shown to damage the kidney, nervous system, and circulatory system of laboratory animals such as rats and mice exposed to high levels during their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the liver, kidney and nervous system. EPA has set the drinking water standard for toluene at 1 part per million (ppm) to protect against the risk of adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to toluene.
- (50) Toxaphene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that toxaphene is a health concern at certain levels of exposure. This organic chemical was once a pesticide widely used on cotton, corn, soybeans, pineapples and other crops. When soil and climatic conditions are favorable, toxaphene may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of

cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for toxaphene at 0.003 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to toxaphene.

- (51) 2,4,5-TP. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 2,4,5-TP is a health concern at certain levels of exposure. This organic chemical is used as a herbicide. When soil and climatic conditions are favorable, 2,4,5-TP may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to damage the liver and kidney of laboratory animals such as rats and dogs exposed to high levels during their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the nervous system. EPA has set the drinking water standard for 2,4,5-TP at 0.05 part per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to 2,4,5-TP.
- (52) Xylenes. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that xylene is a health concern at certain levels of exposure. This organic chemical is used in the manufacture of gasoline for airplanes and as a solvent for pesticides, and as a cleaner and degreaser of metals. It usually gets into water by improper waste disposal. This chemical has been shown to damage the liver, kidney and nervous system of laboratory animals such as rats and dogs exposed to high levels during their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. EPA has set the drinking water standard for xylene at 10 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to xylene.
- (53) Antimony. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that antimony is a health concern at certain levels of exposure. This inorganic chemical occurs naturally in soils, ground water and surface waters and is often used in the flame retardant industry. It is also used in ceramics, glass, batteries, fireworks and explosives. It may get into drinking water through natural weathering of rock, industrial production, municipal waste disposal or manufacturing processes. This chemical has been shown to decrease longevity, and altered blood levels of cholesterol and glucose in laboratory animals such as rats exposed to high levels during their lifetimes. EPA has set the

drinking water standard for antimony at 0.006 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to antimony.

- (54) Beryllium. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that beryllium is a health concern at certain levels of exposure. This inorganic metal occurs naturally in soils, ground water and surface waters and is often used in electrical equipment and electrical components. It generally gets into water from runoff from mining operations, discharge from processing plants and improper waste disposal. Beryllium compounds have been associated with damage to the bones and lungs and induction of cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. There is limited evidence to suggest that beryllium may pose a cancer risk via drinking water exposure. Therefore, EPA based the health assessment on noncancer effects with an extra uncertainty factor to account for possible carcinogenicity. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for beryllium at 0.004 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to beryllium.
- (55) Cyanide. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that cyanide is a health concern at certain levels of exposure. This inorganic chemical is used in electroplating, steel processing, plastics, synthetic fabrics and fertilizer products. It usually gets into water as a result of improper waste disposal. This chemical has been shown to damage the spleen, brain and liver of humans fatally poisoned with cyanide. EPA has set the drinking water standard for cyanide at 0.2 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to cyanide.
- (56) Nickel. (Reserved)
- (57) Thallium. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that thallium is a health concern at certain high levels of exposure. This inorganic metal is found naturally in soils and is used in electronics, pharmaceuticals, and the manufacture of glass and alloys. This chemical has been shown to damage the kidney, liver, brain and intestines of laboratory animals when the animals are exposed at high

levels over their lifetimes. EPA has set the drinking water standard for thallium at 0.002 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to thallium.

- (58) Benzo(a)pyrene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that benzo(a)pyrene is a health concern at certain levels of exposure. Cigarette smoke and charbroiled meats are common sources of general exposure. The major source of benzo(a)pyrene in drinking water is the leaching from coal tar lining and sealants in water storage tanks. This chemical has been shown to cause cancer in animals such as rats and mice when the animals are exposed at high levels. EPA has set the drinking water standard for benzo(a)pyrene at 0.0002 parts per million (ppm) to protect against the risk of cancer. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to benzo(a)pyrene.
- (59) Dalapon. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that dalapon is a health concern at certain levels of exposure. This organic chemical is a widely used herbicide. It may get into drinking water after application to control grasses in crops, drainage ditches and along railroads. This chemical has been shown to cause damage to the kidney and liver in laboratory animals when the animals are exposed to high levels over their lifetimes. EPA has set the drinking water standard for dalapon at 0.2 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to dalapon.
- (60) Dichloromethane. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that dichloromethane (methylene chloride) is a health concern at certain levels of exposure. This organic chemical is a widely used solvent. It is used in the manufacture of paint remover, as a metal degreaser and as an aerosol propellant. It generally gets into drinking water after improper discharge of waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for dichloromethane at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and

should be considered safe with respect to dichloromethane.

- (61) Di(2-ethylhexyl)adipate. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that di(2-ethylhexyl)adipate is a health concern at certain levels of exposure. Di(2-ethylhexyl)adipate is a widely used plasticizer in a variety of products, including synthetic rubber, food packaging materials and cosmetics. It may get into drinking water after improper waste disposal. This chemical has been shown to damage liver and testes in laboratory animals such as rats and mice exposed to high levels. EPA has set the drinking water standard for di(2-ethylhexyl)adipate at 0.4 parts per million (ppm) to protect against the risk of adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to di(2-ethylhexyl)adipate.
- (62) Di(2-ethylhexyl)phthalate. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that di(2-ethylhexyl)phthalate is a health concern at certain levels of exposure. Di(2-ethylhexyl)phthalate is a widely used plasticizer, which is primarily used in the production of polyvinyl chloride (PVC) resins. It may get into drinking water after improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice exposed to high levels over their lifetimes. EPA has set the drinking water standard for di(2-ethylhexyl)phthalate at 0.006 parts per million (ppm) to reduce the risk of cancer of other adverse health effects which have been observed in laboratory animals. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to di(2-ethylhexyl)phthalate.
- (63) Dinoseb. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that dinoseb is a health concern at certain levels of exposure. Dinoseb is a widely used pesticide and generally gets into drinking water after application on orchards, vineyards and other crops. This chemical has been shown to damage the thyroid and reproductive organs in laboratory animals such as rats exposed to high levels. EPA has set the drinking water standard for dinoseb at 0.007 parts per million (ppm) to protect against the risk of adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to dinoseb.
- (64) Diquat. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that diquat is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control terrestrial and aquatic weeds. It may get into drinking water by runoff into surface water. This chemical has been

shown to damage the liver, kidney and gastrointestinal tract and causes cataract formation in laboratory animals such as dogs and rats exposed at high levels over their lifetimes. EPA has set the drinking water standard for diquat at 0.02 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to diquat.

- (65) Endothall. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that endothall is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control terrestrial and aquatic weeds. It may get into water by runoff into surface water. This chemical has been shown to damage the liver, kidney, gastrointestinal tract and reproductive system of laboratory animals such as rats and mice exposed at high levels over their lifetimes. EPA has set the drinking water standard for endothall at 0.1 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to endothall.
- (66) Endrin. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that endrin is a health concern at certain levels of exposure. This organic chemical is a pesticide no longer registered for use in the United States. However, this chemical is persistent in treated soils and accumulates in sediments and aquatic and terrestrial biota. This chemical has been shown to cause damage to the liver, kidney and heart in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. EPA has set the drinking water standard for endrin at 0.002 parts per million (ppm) to protect against the risk of these adverse health effects which have been observed in laboratory animals. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to endrin.
- (67) Glyphosate. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that glyphosate is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control grasses and weeds. It may get into drinking water by runoff into surface water. This chemical has been shown to cause damage to the liver and kidneys in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. EPA has set the drinking water standard for glyphosate at 0.7 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to glyphosate.

- (68) Hexachlorobenzene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that hexachlorobenzene is a health concern at certain levels of exposure. This organic chemical is produced as an impurity in the manufacture of certain solvents and pesticides. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed to high levels during their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for hexachlorobenzene at 0.001 parts per million (ppm) to protect against the risk of cancer and other adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to hexachlorobenzene.
- (69) Hexachlorocyclopentadiene. The United States Environmental Protection Agency (EPA) establishes drinking water standards and has determined that hexachlorocyclopentadiene is a health concern at certain levels of exposure. This organic chemical is used as an intermediate in the manufacture of pesticides and flame retardants. It may get into water by discharge from production facilities. This chemical has been shown to damage the kidney and the stomach of laboratory animals when exposed at high levels over their lifetimes. EPA has set the drinking water standard for hexachlorocyclopentadiene at 0.05 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to hexachlorocyclopentadiene.
- (70) Oxamyl. The United States Environmental Protection Agency (EPA) establishes drinking water standards and has determined that oxamyl is a health concern at certain levels of exposure. This organic chemical is used as a pesticide for the control of insects and other pests. It may get into drinking water by runoff into surface water or leaching into ground water. This chemical has been shown to damage the kidneys of laboratory animals such as rats when exposed at high levels over their lifetimes. EPA has set the drinking water standard for oxamyl at 0.2 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to oxamyl.
- (71) Picloram. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that picloram is a health concern at certain levels of exposure. This organic chemical is used as a pesticide for broadleaf weed control. It may get into drinking water by runoff into surface water or leaching into ground water as a result of pesticide application and improper waste disposal. This

chemical has been shown to cause damage to the kidneys and liver in laboratory animals such as rats when the animals are exposed at high levels over their lifetimes. EPA has set the drinking water standard for picloram at 0.5 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to picloram.

- (72) Simazine. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that simazine is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control annual grasses and broadleaf weeds. It may leach into ground water or runs off into surface water after application. This chemical may cause cancer in laboratory animals such as rats and mice exposed at high levels during their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for simazine at 0.004 parts per million (ppm) to reduce the risk of cancer or other adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to simazine.
- (73) 1,2,4-Trichlorobenzene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 1,2,4-trichlorobenzene is a health concern at certain levels of exposure. This organic chemical is used as a dye carrier and as a precursor in herbicide manufacture. It generally gets into drinking water by discharges from industrial activities. This chemical has been shown to cause damage to several organs, including the adrenal glands. EPA has set the drinking water standard for 1,2,4-trichlorobenzene at 0.07 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to 1,2,4-trichlorobenzene.
- (74) 1,1,2-Trichloroethane. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 1,1,2-trichloroethane is a health concern at certain levels of exposure. This organic chemical is an intermediate in the production of 1,1-dichloroethylene. It generally gets into water by industrial discharge of wastes. This chemical has been shown to damage the kidney and liver of laboratory animals such as rats exposed to high levels during their lifetimes. EPA has set the drinking water standard for 1,1,2-trichloroethane at 0.005 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to 1,1,2-trichloroethane.

- (75) 2,3,7,8-TCDD (Dioxin). The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that dioxin is a health concern at certain levels of exposure. This organic chemical is an impurity in the production of some pesticides. It may get into drinking water by industrial discharge of wastes. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for dioxin at 0.00000003 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to dioxin.
- (76) 1,2,3-Trichloropropane (TCP). The Department of Health has determined that TCP is a health concern at certain levels of exposure. This organic chemical is a by-product of the pesticide 1,3-dichloropropene, which replaced dibromochloropropane (DBCP) as a soil fumigant. It was also an added ingredient in some brands of gasoline. When soil and climatic conditions are favorable, TCP residues in soil may eventually be leached into ground water by rains. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Therefore, to be the most protective of public health, a chemical that causes cancer in laboratory animals is regarded as if it could also increase the risk of cancer in humans who are exposed over long periods of time. The DOH has set the drinking water standard for TCP at 0.0006 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets the state standard is associated with insignificant or no risk and is considered safe with respect to TCP.
- (77) Chlorine. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that chlorine is a health concern at certain levels of exposure. Chlorine is added to drinking water as a disinfectant to kill bacteria and other disease-causing microorganisms and is also added to provide continuous disinfection throughout the distribution system. Disinfection is required for surface water systems. However, at high doses for extended periods of time, chlorine has been shown to affect blood and the liver in laboratory animals. EPA has set a drinking water standard for chlorine to protect against the risk of these adverse effects. Drinking water which meets this EPA standard is associated with little to none of this risk and should be considered safe with respect to chlorine.

- (78) Chloramines. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that chloramines are a health concern at certain levels of exposure. Chloramines are added to drinking water as a disinfectant to kill bacteria and other disease-causing microorganisms and are also added to provide continuous disinfection throughout the distribution system. Disinfection is required for surface water systems. However, at high doses for extended periods of time, chloramines have been shown to affect blood and the liver in laboratory animals. EPA has set a drinking water standard for chloramines to protect against the risk of these adverse effects. Drinking water which meets this EPA standard is associated with little to none of this risk and should be considered safe with respect to chloramines.
- (79) Chlorine dioxide. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that chlorine dioxide is a health concern at certain levels of exposure. Chlorine dioxide is used in water treatment to kill bacteria and other disease-causing microorganisms and can be used to control tastes and odors. Disinfection is required for surface water systems. However, at high doses, chlorine dioxide-treated drinking water has been shown to affect blood in laboratory animals. Also, high levels of chlorine dioxide given to laboratory animals in drinking water have been shown to cause neurological effects on the developing nervous system. These neurodevelopmental effects may occur as a result of a short-term excessive chlorine dioxide exposure. To protect against such potentially harmful exposures, EPA requires chlorine dioxide monitoring at the treatment plant, where disinfection occurs, and at representative points in the distribution system serving water users. EPA has set a drinking water standard for chlorine dioxide to protect against the risk of these adverse effects. Note: In addition to the language in this introductory text of paragraph (79), systems must include either the language in paragraph (79)(i) or (79)(ii) of this section. Systems with a violation at the treatment plant, but not in the distribution system, are required to use the language in paragraph (79)(i) of this section and treat the violation as a nonacute violation. Systems with a violation in the distribution system are required to use the language in paragraph (79)(ii) of this section and treat the violation as an acute violation. (i) The chlorine dioxide violations reported today are the result of exceedances at the treatment facility only, and do not include violations within the distribution system serving users of this water supply. Continued compliance with chlorine dioxide levels within the distribution system minimizes the potential risk of these violations to present consumers. (ii) The chlorine dioxide violations reported today include exceedances of the EPA standard within the distribution system serving water users. Violations of the chlorine dioxide standard within the distribution system may harm human health based on short-term exposures. Certain groups, including pregnant

women, infants, and young children, may be especially susceptible to adverse effects of excessive exposure to chlorine dioxide-treated water. The purpose of this notice is to advise that such persons should consider reducing their risk of adverse effects from these chlorine dioxide violations by seeking alternate sources of water for human consumption until such exceedances are rectified. Local and State health authorities are the best sources for information concerning alternate drinking water.

- (80) Disinfection byproducts and treatment technique for DBPs. The United States Environmental Protection Agency (EPA) sets drinking water standards and requires the disinfection of drinking water. However, when used in the treatment of drinking water, disinfectants react with naturally-occurring organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). EPA has determined that a number of DBPs are a health concern at certain levels of exposure. Certain DBPs, including some trihalomethanes (THMs) and some haloacetic acids (HAAs), have been shown to cause cancer in laboratory animals. Other DBPs have been shown to affect the liver and the nervous system, and cause reproductive or developmental effects in laboratory animals. Exposure to certain DBPs may produce similar effects in people. EPA has set standards to limit exposure to THMs, HAAs, and other DBPs.
- (81) Bromate. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that bromate is a health concern at certain levels of exposure. Bromate is formed as a byproduct of ozone disinfection of drinking water. Ozone reacts with naturally occurring bromide in the water to form bromate. Bromate has been shown to produce cancer in rats. EPA has set a drinking water standard to limit exposure to bromate.
- (82) Chlorite. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that chlorite is a health concern at certain levels of exposure. Chlorite is formed from the breakdown of chlorine dioxide, a drinking water disinfectant. Chlorite in drinking water has been shown to affect blood and the developing nervous system. EPA has set a drinking water standard for chlorite to protect against these effects. Drinking water which meets this standard is associated with little to none of these risks and should be considered safe with respect to chlorite.

APPENDIX B
ROUTINE MONITORING FREQUENCY FOR TTHM AND HAA5 (HAR 11-20-45.1(c)(2)(A))

Type of System	Minimum Monitoring Frequency	• Sample Location in the distribution system
Subpart H system serving at least 10,000 persons.	Four water samples per quarter per treatment plant.	At least 25 per-cent of all samples collected each quarter at locations representing maximum residence time. Remaining samples taken at locations representative of at least average residence time in the distribution system and representing the entire distribution system, taking into account number of persons served, different sources of water, and different treatment methods ¹ .
Subpart H system serving from 500 to 9,999 persons.	One water sample per quarter per treatment plant.	Locations representing maximum residence time.
Subpart H system serving fewer than 500 persons.	One sample per year per treatment plant during month of warmest water temperature.	Locations representing maximum residence time ¹ . If the sample (or average of annual samples, if more than one sample is taken) exceeds MCL, system must increase monitoring to one sample per treatment plant per quarter, taken at a point reflecting the maximum residence time in the distribution system, until system meets reduced monitoring criteria in SHAR 11-20-45.1(c)(2)(A)(iv).
System using only ground water not under direct influence of surface water using chemical disinfectant and serving at least 10,000 persons.	One water sample per quarter per treatment plant ² .	Locations representing maximum residence time ¹ .

APPENDIX B
ROUTINE MONITORING FREQUENCY FOR TTHM AND HAA5 (HAR 11-20-45.1(c)(2)(A))

Type of System	Minimum Monitoring Frequency	Sample Location in the distribution system
System using only ground water not under direct influence of surface water using chemical disinfectant and serving fewer than 10,000 persons.	One sample per year per treatment plant ¹ during month of warmest water temperature	Locations representing maximum residence time ¹ . If the sample (or average of annual samples, if more than one sample is taken) exceeds MCL, system must increase monitoring to one sample per treatment plant per quarter, taken at a point reflecting the maximum residence time in the distribution system, until system meets criteria in HAR §11-20-45.1(c)(2)(A)(iv).

¹If a system elects to sample more frequently than the minimum required, at least 25 per-cent of all samples collected each quarter (including those taken in excess of the required frequency) must be taken at locations that represent the maximum residence time of the water in the distribution system. The remaining samples must be taken at locations representative of at least average residence time in the distribution system.

²Multiple wells drawing water from a single aquifer may be considered one treatment plant for determining the minimum number of samples required, with State approval in accordance with criteria developed under HAR §11-20-45.1(c)(1)(B).

APPENDIX C
REDUCED MONITORING FREQUENCY FOR TTHM AND HAA5 (HAR 11-20-45.1(c)(2)(B))

If you are a...	You may reduce monitoring if you have monitored at least one year and your...	To this level
Subpart H system serving at least 10,000 persons which has a source water annual average TOC level, before any treatment, of <4.0 mg/L.	TTHM annual average <0.040 mg/L and HAA5 annual average <0.030 mg/L.	One sample per treatment plant per quarter at distribution system location reflecting maximum residence time.
Subpart H system serving from 500 to 9,999 persons which has a source water annual average TOC level, before any treatment, of <4.0 mg/L.	TTHM annual average <0.040 mg/L and HAA5 annual average <0.030 mg/L.	One sample per treatment plant per year at distribution system location reflecting maximum residence time during month of warmest water temperature. NOTE: Any Subpart H system serving fewer than 500 persons may not reduce its monitoring to less than one sample per treatment plant per year.
System using only groundwater not under direct influence of surface water using chemical disinfectant and serving at least 10,000 persons.	TTHM annual average <0.040 mg/L and HAA5 annual average <0.030 mg/L.	One sample per treatment plant per year at distribution system location reflecting maximum residence time during month of warmest water temperature.
System using only ground water not under direct influence of surface water using chemical disinfectant and serving fewer than 10,000 persons.	TTHM annual average <0.040 mg/L and HAA5 annual average <0.030 mg/L for two consecutive years OR TTHM annual average <0.020 mg/L and HAA5 annual average <0.015 mg/L for one year.	One sample per treatment plant per three year monitoring cycle at distribution system location reflecting maximum residence time during month of warmest water temperature, with the three-year cycle beginning on January 1 following quarter in which system qualifies for reduced monitoring.

APPENDIX D
REPORTING REQUIREMENTS FOR DISINFECTION BYPRODUCTS (HAR 11-20-45.1(e)(2))

If you are a ...	You must report...
1. System monitoring for TTHM and HAA5 under the requirements of §11-20-45.1(c)(2) on a quarterly or more frequent basis.	<p>I. The number of samples taken during the last quarter.</p> <p>II. The location, date and result of each sample taken during the last quarter.</p> <p>III. The arithmetic average of all samples taken in the last quarter.</p> <p>IV. The annual arithmetic average of the quarterly arithmetic averages of this section for the last four quarters.</p> <p>V. Whether, based on HAR §11-20-45.1(d)(2)(A), the MCL was violated.</p>
2. System monitoring for TTHM and HAA5 under the requirements of §11-20-45.1(c)(2) less frequently than quarterly (but at least annually).	<p>I. The number of samples taken during the last year.</p> <p>II. The location, date and result of each sample taken during the last monitoring period.</p> <p>III. The arithmetic average of all samples taken over the last year.</p> <p>IV. Whether, based on HAR §11-20-45.1(d)(2)(A), the MCL was exceeded.</p>
3. System monitoring for TTHM and HAA5 under the requirements of §11-20-45.1(c)(2) less frequently than annually.	<p>I. The location, date and result of the last sample taken.</p> <p>II. Whether, based on HAR §11-20-45.1(d)(2)(A), the MCL was violated.</p>
4. System monitoring for chlorite under the requirements of §11-20-45.1(c)(2).	<p>I. The number of entry point samples taken each month for the last 3 months.</p> <p>II. The location, date and result of each sample (both entry point and distribution system) taken during the last quarter.</p> <p>III. For each month in the reporting period, the arithmetic average of all samples taken in each 3-samples set taken in the distribution system.</p> <p>IV. Whether, based on HAR §11-20-45.1(d)(2)(C), the MCL was violated, and how many times it was violated each month.</p>

APPENDIX D
REPORTING REQUIREMENTS FOR DISINFECTION BYPRODUCTS (HAR 11-20-45.1(e)(2))

<p>5. System monitoring for bromate under the requirements of §11-20-45.1(c)(2).</p>	<p>I. The number of samples taken during the last quarter.</p> <p>II. The location, date and result of each sample taken during the last quarter.</p> <p>III. The arithmetic average of the monthly arithmetic averages of all samples taken in the last year.</p> <p>IV. Whether, based on HAR §11-20-45.1(d)(2)(B) the MCL was violated.</p>
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The State may choose to perform calculations and determine whether the MCL was exceeded, in lieu of having the system report that information.

APPENDIX E
REPORTING REQUIREMENTS FOR DISINFECTANT RESIDUALS (HAR 11-20-45.1(e)(3))

If you are a ...	You must report...
<p>1. System monitoring for chlorine or chloramines under the requirements of §11-20-45.1(c)(3).</p>	<p>I. The number of samples taken during each month of the last quarter. II. The monthly arithmetic average of all samples taken in each month for the last 12 months. III. The arithmetic average of the monthly averages for the last 12 months. IV. Whether, based on §11-20-45.1(d)(3)(A), the MRDL was violated.</p>
<p>2. System monitoring for chlorine dioxide under the requirements of §11-20-45.1(c)(3).</p>	<p>I. The dates, result, and locations of samples taken during the last quarter. II. Whether, based on §11-20-45.1(d)(3)(B), the MRDL was violated. III. Whether the MRDL was exceeded in any two consecutive daily samples and whether the resulting violation was acute or nonacute.</p>

The State may choose to perform calculations and determine whether the MRDL was exceeded, in lieu of having the system report that information.

APPENDIX F
REPORTING REQUIREMENTS FOR DISINFECTION BYPRODUCT PRECURSORS AND
ENHANCED COAGULATION OR ENHANCED SOFTENING (HAR 11-20-45.1(e) (4))

If you are a ...	You must report...
<p>I. System monitoring monthly or quarterly for TOC under the requirements of §11-20-45.1(c) (4) and required to meet the enhanced coagulation or enhanced softening requirements in §11-20-45.1(f) (2) (B) or (C).</p>	<p>I. The number of paired (source water and treated water) samples taken during the last quarter. II. The location, date and results of each paired sample and associated alkalinity taken during the last quarter. III. For each month in the reporting period that paired samples were taken, the arithmetic average of the percent reduction of TOC for each paired sample and the required TOC percent removal. IV. Calculations for determining compliance with the TOC percent removal requirements, as provided in §11-20-45.1(f) (3) (A). V. Whether the system is in compliance with the enhanced coagulation or enhanced softening percent removal requirements in §11-20-45.1(f) (2) for the last four quarters.</p>

APPENDIX F
REPORTING REQUIREMENTS FOR DISINFECTION BYPRODUCT PRECURSORS AND
ENHANCED COAGULATION OR ENHANCED SOFTENING (HAR 11-20-45.1(e) (4))

2. System monitoring monthly or quarterly for TOC under the requirements of §11-20-45.1(c) (4) and meeting one or more of the alternative compliance criteria in §11-20-45.1(f) (1) (B) or (C).	<p>I. The alternative compliance criterion that the system is using.</p> <p>II. The number of paired samples taken during the last quarter.</p> <p>III. The location, date and result of each paired sample and associated alkalinity taken during the last quarter.</p> <p>IV. The running annual arithmetic average based on monthly averages (or quarterly samples) of source water TOC for systems meeting a criterion in §11-20-45.1(f) (1) (B) (i) or (iii) or of treated water TOC for systems meeting the criterion in §11-20-45.1(f) (1) (B) (ii).</p> <p>V. The running annual arithmetic average based on monthly averages (or quarterly samples) of source water SUVA for systems meeting the criterion in §11-20-45.1(f) (1) (B) (v) or of treated water SUVA for systems meeting the criterion in §11-20-45.1(f) (1) (B) (vi).</p> <p>VI. The running annual average of source water alkalinity for systems meeting the criterion in §11-20-45.1(f) (1) (B) (iii) and of treated water alkalinity for systems meeting the criterion in §11-20-45.1(f) (1) (C) (i).</p> <p>VII. The running annual average for both TTHM and HAA5 for systems meeting the criterion in §11-20-45.1(f) (1) (B) (iii) or (iv).</p> <p>VIII. The running annual average of the amount of magnesium hardness removal (as CaCO₃ in mg/L) for systems meeting the criterion in §11-20-45.1(f) (1) (C) (ii).</p> <p>IX. Whether the system is in compliance with the particular alternative compliance criterion in §11-20-45.1(f) (1) (B) or (C).</p>
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The State may choose to perform calculations and determine whether the treatment technique was met, in lieu of having the system report that information.